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**OF THE**  
**American Veterinary Medical Association**  
**FORMERLY AMERICAN VETERINARY REVIEW**

(Original Official Organ U. S. Vet. Med. Ass'n.).

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December, 1931

No. 6

**TWO MORE COLLEGES ADOPT FIVE-YEAR COURSE.**

Upon recommendation of the faculty of the Division of Veterinary Medicine, Kansas State College, the general faculty of that institution has approved the adoption of a five-year curriculum in veterinary medicine, the lengthened course to become effective in September, 1932.

Dean Dykstra advises that the new five-year curriculum will be entirely under the supervision of the veterinary faculty. The first year of the course will be known as the pre-veterinary year and will include thirty semester hours of college credits, divided among the following subjects: English (5 to 6 hours), general inorganic chemistry (5 to 10 hours), zoölogy (5 hours) and elective courses (9 to 15 hours). It is recommended that the elective courses be selected from a modern language (either German or French), physics and mathematics.

A high-school graduate may enroll for the pre-veterinary year at Kansas State College. However, the year may be taken at any approved junior college, college or university. Students intending to take the veterinary course at Kansas State College are urged to take the pre-veterinary year at that institution.

The last four years of the enlarged curriculum will be devoted almost entirely to strictly professional courses. These four

years have been strengthened, particularly in milk and dairy inspection, meat hygiene, as well as in poultry, pet animal, sheep, swine and cattle practice.

Kansas State College will also offer two six-year combination curricula, the first of these leading to the two degrees Bachelor of Science in Agriculture and Doctor of Veterinary Medicine, and the second to the degrees Bachelor of Science and Doctor of Veterinary Medicine.

The October issue of the *Cornell Veterinarian* contains an announcement to the effect that the New York State Veterinary College at Cornell University, beginning in September, 1932, will require one year of college work for entrance. This pre-veterinary year of college work must include six hours of chemistry, six hours of English, four hours of either French or German, and fourteen hours of elective subjects.

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### MEMBERSHIP DIRECTORY

Copy is now being prepared for a new edition of the American Veterinary Medical Association Membership Directory, ordered published by the Executive Board. This is badly needed in view of the fact that there was no directory published for the year 1930-1931. The edition being prepared will contain, in addition to the list of members, the complete roster of the officers and committees for the year 1931-1932. President Dykstra has practically completed making his appointments, although the personnel of a few committees has not yet been finally decided upon.

The new Directory will follow the same general style of the previous edition in which members were listed geographically by states, provinces, and so forth. One new feature will be incorporated in the 1931-1932 edition. Opposite the name of each member there will be indicated his college (or colleges) of graduation and the year (or years). In connection with this feature it has been necessary for us to work out a system for abbreviating the names of the various veterinary colleges, over forty in number, graduates of which institutions are members of the A. V. M. A.

The particular reason for announcing the new edition of the Directory at this time is to bring the matter to the attention of any members who have changed their addresses or locations recently. Our records show that the past year has been rather unusual in this respect. What would appear to be an extra-

ordinarily large number of members have reported changes of address recently and it is extremely important that we be advised of any other changes that may have not been brought to our attention. The value of the Directory is lessened to the extent of the incorrect addresses which we have for members. Coöperate with us with a view to making the new directory 100 per cent accurate. One cent for a postal card is all that it will cost you to advise us of a change of address. If by any chance your name was incorrectly listed in the 1929-1930 edition of the Directory, bring this to our attention, provided, of course, that you have not already done so. All plans are being made to have the new edition ready for distribution shortly after the first of the year.

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### A GENEROUS ACT

Again the Kansas City veterinarians have come to the fore, this time by making the Women's Auxiliary to the A. V. M. A. the happy recipient of a very generous gift. As the ladies of that organization were negotiating for a small loan from the A. V. M. A., to tide them over a rather lean period in their finances, word came that the Kansas City local committee would come to the rescue. Despite the beautiful and lavish entertainment given to the visiting ladies in Kansas City in August, the finances had been so well managed that a small surplus remained. In a most generous spirit, the committee offered to share that surplus with the Auxiliary. They now have entered in their books the splendid gift of \$300 from Kansas City, for the Student Loan Fund. Many, many thanks go out from every one for the gift and the generosity which prompted it.

A. M. H.

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### QUIET AGAIN ON THE IOWA FRONT

The "cattle testing" war in Iowa has quieted down to the point where it has been crowded off the front pages of the newspapers. It is now almost a month since any serious hostilities were reported. During the first week in November, there was a re-crudescence of trouble near West Point, in Lee County, where three veterinarians and two sheriffs were vigorously received by a mob of 200 farmers on a farm where there were some cattle to be tested. According to reports, Chief Veterinarian Malcolm, his two assistants, Sheriff Maas, of Keokuk, and a deputy were

pelted with clods of earth and other missiles. The mob rushed the car in which the five officials were riding, cut one tire, deflated another and broke a trunk carrier on the machine.

Such disgraceful occurrences are not without their potential danger, although no reports of any fatalities have been received thus far. The tactics employed by the "revolutionists" have been of a kind merely to obstruct and delay the work. However, newspaper reports of the ongoings have made good reading and have been published in the daily press all over the country. This is one of the disagreeable features at this particular time, when there is such a general state of unrest. The trouble in Iowa may be likened to an infectious disease. It may spread.

There has been trouble in other states from time to time, fomented largely by paid workers whose job it has been to stir up trouble, and keep it stirred up just as long as possible. (Such agitators should be branded as "public enemies" and treated as such.) Fortunately for the cause of tuberculosis eradication, these troubles have been fought out in court in practically all cases. In a few instances there have been symptoms of impending mob violence, but these have usually been dissipated by the showing of a stiff front upon the part of those legally empowered to conduct the work of tuberculosis eradication. If there were any further differences, these have been settled in court.

It is not with a feeling of exultation that we refer to the fact that practically all court decisions have been favorable to the cause of tuberculosis eradication. It might be inconsistent to rejoice over this fact and at the same time question the soundness of a policy based on compulsion. A law is only as strong as the public sentiment behind it. The majority of Iowa farmers favor tuberculosis eradication. The same has been true of other states. If there is any question about this, just see what has been accomplished in such states as Maine, North Carolina, Michigan and Indiana, all accredited as tuberculosis-free, and a long list of other states well along the road toward the same high status.

In the case of the few hundred misguided Iowa Farmers who have been obstructing progress, it would probably be fair to say that they have been sincere in their efforts to "protect their rights." They have listened to the propaganda of paid agitators based on false premises rather than turn attentive ears to those whose business it is to know what is right and proper, what is sensible and sound, what is profitable and economical in the long run, in live stock sanitation. When the compulsory tuberculin



test law was passed in Iowa, public opinion was favorable to tuberculosis eradication. From what we can learn that opinion is stronger than ever. The law appears to be the best weapon for getting in line those backward counties that would stand in the way of Iowa becoming an accredited state. The ideal situation, however, would be to reach that goal without recourse to the law, if in any way possible.

Tuberculosis eradication would never have progressed to the point that it has reached today had we started out by passing laws making the tuberculin test compulsory. It was first necessary to sell the idea on its own merits. This was done by a campaign of education. When the movement finally got under way, it was carried along largely by its own momentum. In many sections of the country it would have been difficult to stop it if anyone had been foolish enough to try. Education and selling the idea on its intrinsic merits have produced this condition.

These deluded Iowa farmers simply have not been sold the right idea. They have bought the wrong one. They are probably in the same frame of mind as the farmer in some southern state who does not want to have his cattle dipped to get rid of the ticks, largely because he does not understand the proposition; or the owner of a dog in some large city who does not like the idea of having his dog vaccinated against rabies, because the only reason given is that "it is the law."

It has been interesting to read the editorial comments, on the Iowa situation, that have appeared in the press throughout the country. In this connection, it has been pleasing to note the practically unanimous support given the cause of tuberculosis eradication. We have always contended that this great work could and should stand on its own feet, for the one simple reason that it is not profitable to maintain tuberculosis in a herd of cows. On the other hand, it will pay to get rid of it. No other argument should be necessary. The following editorial, from the Alton (Ill.) *Telegraph*, entitled, "The Bayonet Test on Cattle," is very much to the point:

Apparently the chief element required for the successful operation of any law, that of education for the people on whom it is imposed, is absent from the procedure of the state of Iowa in its attempt to carry through tuberculin tests of dairy cattle.

Each new day of the state's activity sees new hundreds of farmers indignant at the procedure of veterinarians, guarded by companies of militia, taking charge of their herds. Cries of revolt, of graft, of racketeering, of confiscation, fill the air. When men are suspicious of something they do not understand, their wrath takes wild tangents.

Obviously there would be little chance for graft or racketeering in the course of testing cattle for disease and destroying those found to be unsafe for the public health.

Other states have adopted the tuberculin test, and it has become acceptable to the point that it is welcome.

In Illinois the procedure has been orderly. Gently have been applied the elements of: first, salesmanship; second, inducement; and third, public necessity.

The degree of success of this system is best described by Dr. Huggins, Madison County veterinarian, who says he has "almost talked himself out of a job."

The argument "Why keep a diseased cow?" is advanced and allowed to take root. This is backed up by the state's willingness to pay the owner half the value of any animals that must be destroyed. And over all spreads the disarming fact that the test is entirely optional with the owner of the cattle. The state will test the animals without charge, will bear half the loss, if there is any, and is very eager to have the health measure accepted—but it will not force it on anyone who does not desire to accept its good offices.

The consequence has been that almost all the milk cattle in Madison County, as well as the state, have passed inspection. The few remote exceptions are probably less numerous than are the evasions of many other regulations.

Iowa is trying to catch flies with vinegar and finding it very difficult.

### Kansas City Attendance Figures

In discussing figures covering attendance at A. V. M. A. conventions the question is sometimes asked: "Who are included in these figures?" It has usually been customary to count everybody actually in attendance at a convention and not limit the figures either to members or veterinarians. The following analysis of the attendance at the Kansas City convention will show who were included in the final tabulation of 1,447:

Members.....	568
Applicants for membership.....	51
Veterinarians not members.....	264
Veterinary students.....	25
Ladies.....	383
Children.....	88
Guests, exhibitors and all others.....	68
Total.....	1,447

It will be noted that veterinarians accounted for approximately 61 per cent of the total at Kansas City.

There were four important gatherings of veterinarians, during the month of November, in various parts of the country—at Boston, Mass.; Atlanta, Ga.; Trenton, N. J.; and Lafayette, Ind. All four events were scheduled for the same days—November 10 and 11—suggesting the need for a central bureau for "dating up" veterinary meetings.

## APPLICATIONS FOR MEMBERSHIP

### FIRST LISTING

(See July, 1931, JOURNAL)

- AITKEN, HOWARD M. 251 15th Ave., Columbus, Ohio  
D. V. M., Ohio State University, 1931  
Vouchers: W. F. Guard and Leonard W. Goss.
- CLARVOE, H. M. Artillery Field, Howard & Cass Sts., Tampa, Fla.  
D. V. M., United States College of Veterinary Surgeons, 1918  
Vouchers: R. L. Brinkman and B. N. Lauderdale.
- HARMS, HERBERT F. 223 Middletown Rd., Pearl River, N. Y.  
D. V. S., New York University, 1908  
Vouchers: A. Eichhorn and J. G. Wills.
- JONES, LLOYD D. Rochelle, Ill.  
D. V. M., Iowa State College, 1931  
Vouchers: L. A. Merillat and F. R. Whipple.
- PETERS, JAMES R. State Laboratories, Reynoldsburg, Ohio  
D. V. M., Ohio State University, 1931  
Vouchers: W. F. Guard and W. R. Krill.

### SECOND LISTING

(See November, 1931, JOURNAL)

- Christopher, W. F., La Porte City, Iowa.  
Gandy, Marshall H., 1810 Cherokee Ave., Baton Rouge, La.  
Hoffman, Roy D., Bedford, Pa.  
Jackson, R. W., Bureau of Animal Industry, State Office Bldg., Trenton, N. J.  
Menary, A. R., 1721 Blake Bldg., Cedar Rapids, Iowa.

The amount which should accompany an application filed this month is \$5.42, which covers membership fee and dues to January 1, 1932, including subscription to the Journal. It is suggested that applications filed this month be accompanied by remittance for \$10.42, the additional \$5.00 being for the 1932 dues.

## COMING VETERINARY MEETINGS

- U. S. Live Stock Sanitary Association. LaSalle Hotel, Chicago, Ill. December 2-4, 1931. Dr. O. E. Dyson, Secretary, 45 Live Stock Exchange Bldg., Wichita, Kans.
- Chicago Veterinary Medical Association. Atlantic Hotel, Chicago, Ill. December 8, 1931. Dr. E. E. Sweebe, Secretary, 14th St. & Sheridan Road, North Chicago, Ill.
- Kansas City Association of Veterinarians. Baltimore Hotel, Kansas City, Mo. December 8, 1931. Dr. J. D. Ray, Secretary, 1103 E. 47th St., Kansas City, Mo.
- Nebraska State Veterinary Medical Association. Hotel Rome, Omaha, Nebr. December 8-9, 1931. Dr. E. C. Jones, Secretary, Platte Valley Serum Co., Grand Island, Nebr.
- Southeastern Michigan Veterinary Medical Association. Detroit, Mich. December 9, 1931. Dr. H. Preston Hoskins, Secretary, 537 Book Bldg., Detroit, Mich.

- Tulsa County Veterinary Association. Tulsa, Okla. December 10, 1931: Dr. J. M. Higgins, Secretary, 3305 E. 11th St., Tulsa, Okla.
- New Mexico Veterinary Medical Association. Albuquerque. New Mexico. December 11, 1931. Dr. F. H. Barr, Secretary-Treasurer, 112 S. Broadway, Albuquerque, New Mexico.
- Southern California Veterinary Medical Association. Chamber of Commerce Bldg., Los Angeles, Calif. December 16, 1931. Dr. E. E. Jones, Secretary, 1451 Mirasol St., Los Angeles, Cal.
- Western New York Veterinary Medical Association. Buffalo, N. Y. December 17, 1931. Dr. F. F. Fehr, Secretary, 243 S. Elmwood Ave., Buffalo, N. Y.
- Keystone Veterinary Medical Association. Philadelphia, Pa. December 23, 1931. Dr. C. S. Rockwell, Secretary, 5225 Spruce St., Philadelphia, Pa.
- American Association for the Advancement of Science. New Orleans, La. December 28, 1931-January 2, 1932. Dr. Burton E. Livingston, Secretary, Smithsonian Institution Bldg., Washington, D. C.
- New York City, Veterinary Medical Association of. Academy of Medicine, 5th Ave. and 103rd St., New York, N. Y. January 6, 1932. Dr. John E. Crawford, Secretary, 708 Beach 19th St., Far Rockaway, Long Island, N. Y.
- Ohio State Veterinary Medical Association. Neil House, Columbus, Ohio. January 6-7, 1932. Dr. R. E. Rebrassier, Secretary, Ohio State University, Columbus, Ohio.
- Pennsylvania, Conference of Veterinarians at University of. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa. January 6-7, 1932. Dr. G. A. Dick, Dean, 39th St. & Woodland Ave., Philadelphia, Pa.
- Minnesota State Veterinary Medical Society. West Hotel, Minneapolis, Minn. January 7-8, 1932. Dr. C. P. Fitch, Secretary, University Farm, Saint Paul, Minn.
- South Dakota Veterinary Medical Association. Hotel Cataract, Sioux Falls, S. Dak. January 7-8, 1932. Dr. Geo. E. Melody, Secretary, Hoven, S. Dak.
- Maryland State Veterinary Medical Association. Medical Hall, 1211 Cathedral St., Baltimore, Md. January 8, 1932. Dr. E. M. Pickens, Secretary, College Park, Md.
- Intermountain Livestock Sanitary Association. Hotel Bigelow, Ogden, Utah. January 11-13, 1932. Dr. H. J. Frederick, Secretary, Utah Agricultural College, Logan, Utah.

- Wisconsin Veterinary Medical Association. Madison, Wis. January 11-13, 1932. Dr. B. A. Beach, Secretary, University of Wisconsin, Madison, Wis.
- Rhode Island Veterinary Medical Association. Narragansett Hotel, Providence, R. I. January 12, 1932. Dr. G. L. Salisbury, Secretary, Wickford, R. I.
- Iowa Veterinary Medical Association. Fort Des Moines Hotel, Des Moines, Iowa. January 12-15, 1932. (January 12-14 at Des Moines and January 15 at Ames.) Dr. C. J. Scott, Secretary, Knoxville, Iowa.
- Maine Veterinary Medical Association. State House, Augusta, Me. January 13, 1932. Dr. L. E. Maddocks, Secretary, R. F. D. 2, Augusta, Me.
- New Jersey Veterinary Medical Association of. Jersey City, N. J. January 13-14, 1932. Dr. John G. Hardenbergh, Secretary, c/o Walker-Gordon Lab. Co., Plainsboro, N. J.
- Cornell University, Annual Conference for Veterinarians at. Cornell University, Ithaca, N. Y. January 14-15, 1932. Dr. E. Sunderville, Secretary, Forest Home, Ithaca, N. Y.
- Texas, State Veterinary Medical Association of. Dallas, Texas. January 15-16, 1932. Dr. D. Pearce, Secretary, Box 335, Leonard, Texas.
- Oklahoma Veterinary Medical Association. Skirvin Hotel, Oklahoma City, Okla. January 18-19, 1932. Dr. C. H. Fauks, Secretary, 1919 W. Ash St., Oklahoma City, Okla.
- Tennessee Veterinary Medical Association. Memphis, Tenn. January 19-20, 1932. Dr. A. C. Topmiller, Secretary, Box 238, Murfreesboro, Tenn.
- Mississippi State Veterinary Medical Association. Clarksdale, Miss. January 21-22, 1932. Dr. C. B. Bradshaw, Secretary, Box 725, Jackson, Miss.
- Michigan State College Short Course for Veterinarians. Michigan State College, East Lansing, Mich. January 25-29, 1932. Dr. Ward Giltner, Dean, Division of Veterinary Science, Michigan State College, East Lansing, Mich.
- Indiana Veterinary Medical Association. Severin Hotel, Indianapolis, Ind. January 26-28, 1932. Dr. R. H. Boyd, Secretary, 1422 N. Capital Ave., Indianapolis, Ind.

### STATE BOARD EXAMINATION

- California State Board of Examiners in Veterinary Medicine. Davis, Calif. January 6-7, 1932. Dr. G. E. Middlehoff, Secretary, Oroville, Calif.



## THE VETERINARY HOSPITAL

By HORST SCHRECK, *El Paso, Texas*

(Concluded from page 602, November issue)

### THE GENERAL PLAN

*Kennel computation:* It is not the scope of this paper to determine the available canine or feline sick-list for hospitalization. Information on hand is altogether too meager to form more than just a suggestive formula for the determination of hospital size.

Let us assume a city with a total licensed dog population of 10,000 animals, of which 4,000 are females. One hospital has already been in business several years and we are adding a second hospital, hoping to create mostly new business.

$$A \text{ (total licensed dog population of city)} = 10,000$$

$$B \text{ (licensed female dog population)} = 4,000$$

$$C \text{ (cat population)} = \frac{A}{4} = 2,500$$

$$D \text{ (medical and surgical kennels)} = \frac{10,000 + 2,500}{200} \left( \frac{A + C}{200} \right) = 62.5$$

$$E \text{ (maternity kennels)} = \frac{4,000}{400} \left( \frac{B}{400} \right) = 10$$

$$F \text{ (convalescent kennels)} = \frac{(62.5 + 10 + 25) \times 12}{100}$$

$$\left( \frac{(D + E + G) \times 12}{100} \right) = 11.7$$

$$G \text{ (distemper kennels)} = \frac{10,000 + 2,500}{500} \left( \frac{A + C}{500} \right) = 25^*$$

$$H \text{ (total kennels in hospital)} = \frac{62.5 + 10 + 11.7 + 25}{2}$$

$$\left( \frac{D + E + F + G}{J} \right) = 54.6$$

$$J \text{ (number of hospitals in city)} = 2$$

Fifty-five kennels of all descriptions would appear to be required. These formulae are mere conjectures and if hospitals

\* A few distemper cats will have to be isolated.

from all over the country will report their findings on the basis of these formulae, we will in time be able to establish fairly accurate guides for future reference.

#### THE EVOLUTION OF A GENERAL PLAN INTO THE DIFFERENT TYPES

As we have learned before, the requirements for veterinary service may call for lay-outs from the simplest "clinic" arrangement to an elaborate scheme in connection with a veterinary college.

#### THE CLINIC

It is questionable in my mind whether a clinic proper could be made financially successful except in a very large city, or as an outpost for a coöperative or suburban hospital. A clinic has no accommodations to take care of patients beyond their examination and the physical and medical attention their condition may require. In consequence, our room requirements are limited and are usually confined to:

Reception-room.

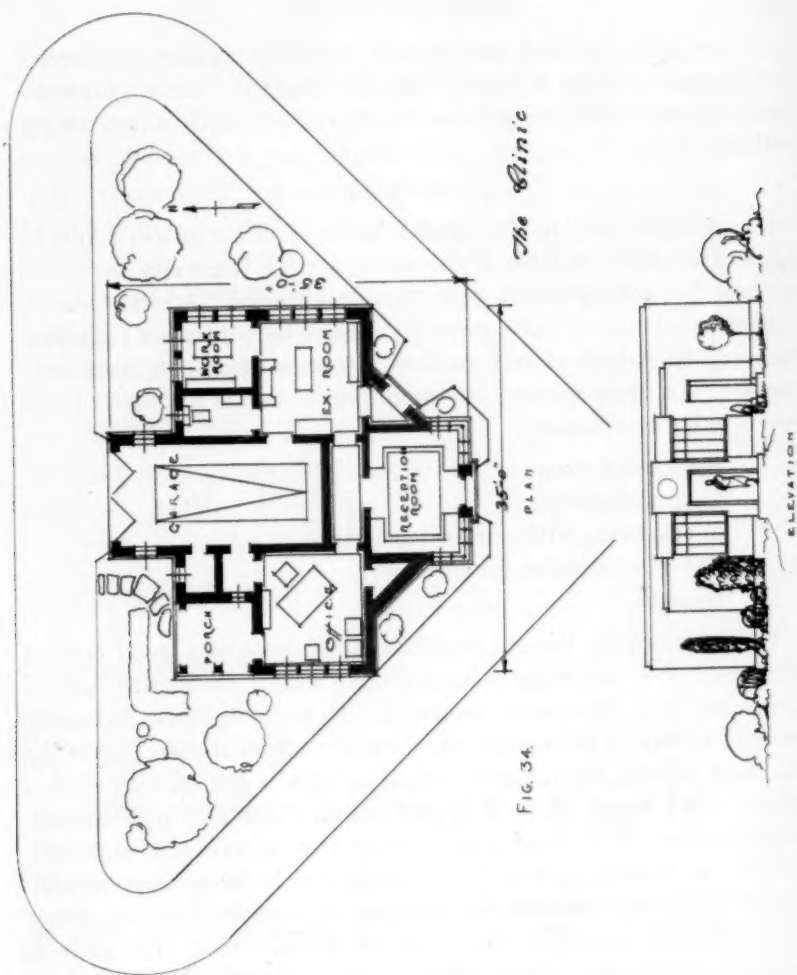
Examining-room.

Work-room with surgical facilities.

Office with toilet facilities.

Garage.

Such a compact lay-out could bear the cost of a good central location, or a suburban location that would ordinarily not be conceded to a veterinary hospital. If we should be fortunate enough to have a triangular lot, even of very small size, bordering on three streets, the location would be ideal. Let us visit such a place. (See figure 34.) It is located on a recently cut through thoroughfare in a large city. Since this street is a diagonal, numerous triangular lots have resulted that have been rapidly taken up by semi-residential business enterprises, and the owner was fortunate enough to get in on the ground floor. His place is located out on 56th Street, right in the residential district, where the noise and bustle of a small-animal hospital would not be tolerated ordinarily. However, with the help of some influential clients, he was permitted to present his petition for a special permit, together with the plans, to the city authorities. Today, as the building stands, there is no objection and the neighboring residents are glad to have a competent man to look after their pets, so readily available.



The building extends to the very limits of the small lot. Available spaces are carpeted with a beautiful lawn, interspersed with flowers and shrubbery. The plan lent itself well to a modern exterior. The walls are set up in mottled, cream-colored brick, blending in well with the residential character of the neighborhood. The main entrance bespeaks the business character of the building. The reception-room is very cheerful, about one-third of its wall space being taken up by windows. The furnishing is severely plain yet cozy. Nothing in this room divulges the doctor's business except his diploma. There is no direct access, from this room, to any other part of the building except through a vestibule-corridor. This gives the veterinarian an opportunity to guide his clients into his office, or the examining-room, as he wishes. There are many decided advantages to this arrangement. He may handle two or three patients at a time. Both rooms have direct exits to the outside, thus avoiding the meeting of clients to talk matters over.

The entire east wall of the examining-room is taken up by a window. One door leads into the work-room, which faces east and north, with maximum daylight illumination. Another door opens into the toilet, while the fourth door serves as an entrance from the garage, so that injured or poisoned dogs may be brought in directly from the car to the table. On the other side of the building, with a large window facing west, we have the veterinarian's office. On entering this room we have one door on the left, opening into a closet. There are two doors on the right, one as an indirect entrance from the garage and another as an exit to an open porch, a nice place to have a little chat or a needed rest. The garage, while a central feature in the plan, is nevertheless a very subordinate feature, absorbing all the unexpendable inside space. The owner says: "I have just what I wanted, and if anything is not as it should be, I haven't found it yet, after the six months I have been in the place."

Should the clinic be used as a collecting focus for a coöperative hospital, the problem will have to be circumvented by the addition of a few collecting kennels, which may be located in the work-room, the latter being consolidated with the examining-room. Much of the work previously performed in the work-room will now be done at the hospital.

#### THE ACCOMMODATION HOSPITAL FACILITIES

The general practitioner, who will find it necessary to maintain a few accommodation kennels, in addition to his facilities for

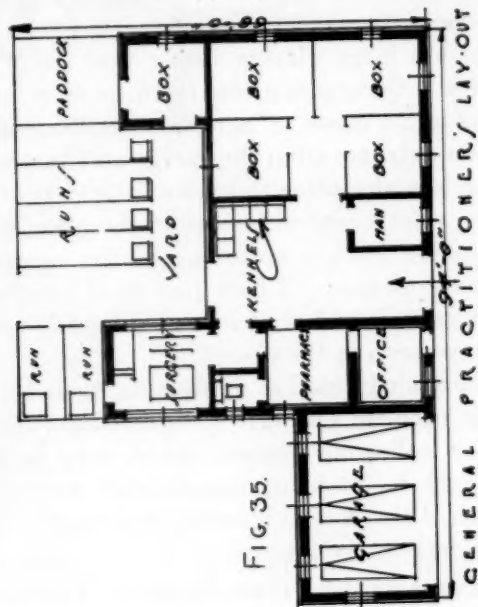


FIG. 35.

GENERAL PRACTITIONER'S LAYOUT

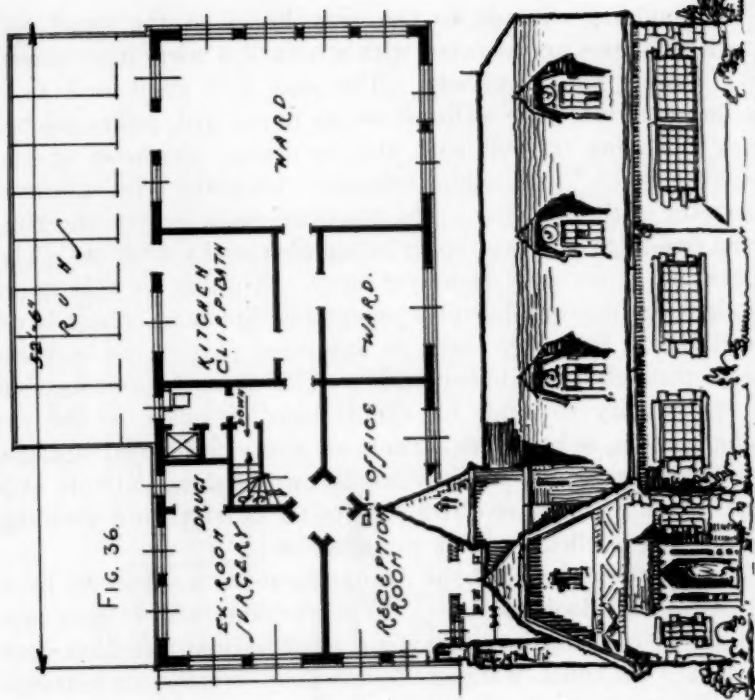


FIG. 36.

SMALL-ANIMAL HOSPITAL ON OPEN LOT



hospitalizing large animals, is usually fortunate in that he lives in a rural or semi-rural community, where property values allow him the choice of a favorable location. It is not likely that he will have a large enough number of small animals in his place to call for a special attendant, and since it would be impossible for him to keep a continuous surveillance over them, it would be well if he could give each dog a liberal run together with a properly constructed kennel. Such a practitioner's infirmary might probably accommodate six to ten dogs before entering into the class of small-animal hospitals. His office lay-out would have to conform more to his general practice requirements and the kennels and runs would be rather subordinate. At that he should have a proper examining-room with possibly a combination operating and examining-table. His small-animal drug supply naturally would occupy only a portion of his regular pharmacy. I have in mind a very good arrangement that I had an opportunity to work in some years ago, and I still think that it was one of the best of its kind. Just let me take you over there and let us visit the veterinarian and look at his place. (See figure 35.)

Doctor J. always enjoyed a good practice, having one or two assistants in his employ continuously. His practice is of a very general nature. His town is the county seat. A very large city is some 50 or 60 miles away, and the well-to-do people of this city have their country places nestled among the many excellent dairy farms in his territory. Hunt and polo clubs are near and far, and those of the rich gentry who felt a call to be gentlemen-farmers have invested heavily in fancy cattle. All this is very good for our friend the veterinarian. And his place bespeaks it. Right in town we find his fine and commodious residence, with spacious lawns surrounding it and shaded by beautiful trees. His hospital is at the end of the lane passing his house. Unobtrusive, lovely and practical would cover the description of it in three words. But let us see what makes it so.

Approaching the hospital we are struck by its lovely stone architecture and its large tiled roof. The building is crowned by an elegant cupola, surmounted by a weather-vane indicating the nature of the building. To the left the drive leads into a three-car garage and straight ahead into the large fore-room of the stable-hospital combine. In winter the sleighs for country drives are parked here. Between the garage and the arched main entrance is the office. It is not pretentious, but provides room for a desk, instrument-cases, some drugs and a sizable library.

A complete pharmacy for the compounding of the extensive line of ready-wrapped medications, either dispensed on calls or sold on a prescription basis, is located immediately behind the office. From here a door leads into a little anteroom connecting with the surgery and stable. The surgery is lighted by two large windows. In the surgery we also find a footbath and stocks for horses. Two kennels and runs connect with and lie beyond the surgery.

On the other side of the stable foyer we find a few indoor dog-kennels and four box-stalls for horses. An outside box with connecting paddock may be used for a hospital case or the family cow. Four more kennels and runs cover the remaining space of the lot, leaving a yard useful for many purposes. It has been shown how precariously near the general practitioner can proceed, with his small-animal work, to the line of demarcation from the small-animal specialist. When he exceeds the fifteen accommodation kennels he does an appreciable amount of small-animal work, and will have to have an assistant for this sphere of the work or completely abandon his general practice and consign all of his time and effort to this work. This will place him in a new classification with its demand for a larger number of kennels. If his canine practice is ample enough for him to plunge into it, he will soon find himself working with from 15 to 25 kennels as a good basis for a specialized small-animal hospital.

He will now be confronted with the necessity of a substantial investment, and since an investment in a hospital must not be confused with the investment in a veterinary education, he should stop and consider all the means, manners and ways to make his institution an economic success. He is now face to face with the fact that the hospital must bring him commercial financial returns for the funds invested, altogether apart from the earnings which the investment in his education should show. It has been my observation that these two returns are often confused or thrown together into the same pot, and no light ever shines on the actual status of financial affairs.

Of course a small-animal hospital is not a great business venture, but a hundred or a thousand such hospitals would be an appreciable undertaking, engaging the minds of the country's best promoters, consultants, financiers, engineers and architects. There is no reason why one-hundredth or one-thousandth of such a great undertaking should not receive at least a thorough study of all available material by the prospective builder-veterinarian.

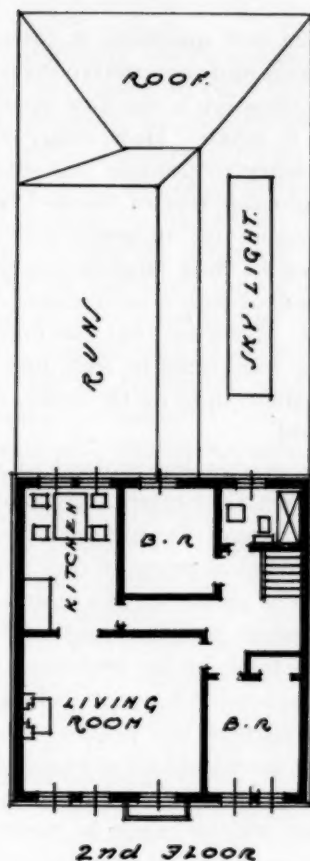
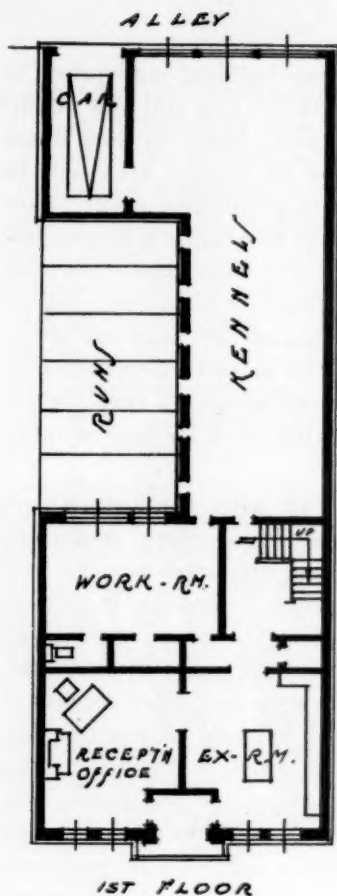
The first question, in presenting large building enterprises to bankers and prospective investors, is: Will it pay and how much? The question is not how much money will it take, but how much will it make. How many square feet of ground area will be necessary to produce one square foot of productive area? How many cubic feet of finished building will be absorbed to produce one cubic foot of productive space? Have these questions been solved to their most favorable possibilities, or is the proposition presented just a mere guess or a half-baked first shot out of the box? If we see that the financier or the investor demands that these conditions be met, how much more necessary then for the veterinarian to do the same, when putting all of his eggs into one basket.

In calculating projects of this kind we must not lose sight of the fact that often a good appearance of a building, something that cannot be brought back in direct financial returns, will nevertheless prove to be a good investment indirectly, in attracting new business. No undertaking will survive very long without persistent new business. The thought uppermost in our mind, then, must be the problem to keep the area and cubic content of the productive portion of the hospital as small as practical use and purpose will permit. In close comparisons of solutions, the most practical and workable one should have the preference, even though it may not be the most valuable solution. While every effort will be made to present economic solutions of problems, cognizance must be taken of the fact that space will not permit us to go into all the details that would bring each proposed building to its ultimate perfection.

#### THE LOT

Unless the builder already owns his lot, he should make a complete list of all available lots in his community, according to location. Consider such matters as proximity to traffic arteries, proximity to a residential district, zoning ordinances, possible local objection, corner or inside lots, geographic orientation, size of lot, and the price. So many points will have to be considered that are individual to each case and locality that only a few generalized rules can be given here to guide in the selection of a lot.

Proximity to a traffic artery is more essential than a location directly on the traffic artery, for convenience of automobile parking. The large majority of dogs are kept in homes in some



SMALL-ANIMAL-HOSPITAL  
WITH  
LIVING-QUARTERS UP-STAIRS

INSIDE-LOT  
40'-0" X 100'-0"

FIG. 37.



residential district. If we can place our hospital in the path of travel from the residential to the business district, we will be saving time for our clients and, at the same time, making it easy for them to patronize us. We should strive to get close to the next higher zoning district, but never encroach where a hospital is not wanted. The opposition will be greater than the advantage gained. An open lot is the first choice. A corner lot will always be more desirable than an inside lot. Short frontage on the more costly street is often offset by loss of advertising appeal. East and south exposure comes first, north and west next, and south and west last. Prevailing winds, location in the extreme south or north, or preferences may altogether change these ratings.

The necessary size of the lot is decided upon after the demands of the plans have been established, and plans again in turn may have to be altered to fit the best lot. The price is altogether determined by local conditions, and should be only a relative deciding factor. The man awake to the possibilities of the future will now make provisions to park cars on his property. This will be expensive. Cars with dogs in them, that need attention, passing up your place are expensive, too.

#### THE SMALL HOSPITAL

The small hospital, as the name indicates, will be small. It will likely be a nucleus for a larger hospital, and should be planned with future additions in mind. Numerous units will have to be consolidated in the small hospital and planning carried out with a view of splitting up these combinations in future enlargements. The elements of a small hospital are:

Reception-room and office.

Examining-room, with surgery and pharmacy.

Kennel-room.

Work-room, kitchen, clipping-room and bath.

Corridors and garage.

Dr. X., in Pineville, has a very nice place well fitting in with the rural architecture of his community. (See figure 36.) Special attention is directed to the door arrangement, connecting the reception-room, office, examining-room and ward entrance, in a space 3' 6" x 3' 6". It will be noted that each unit has only one door and that any unit may be reached from another one without passing through a third unit. This arrangement, the doctor



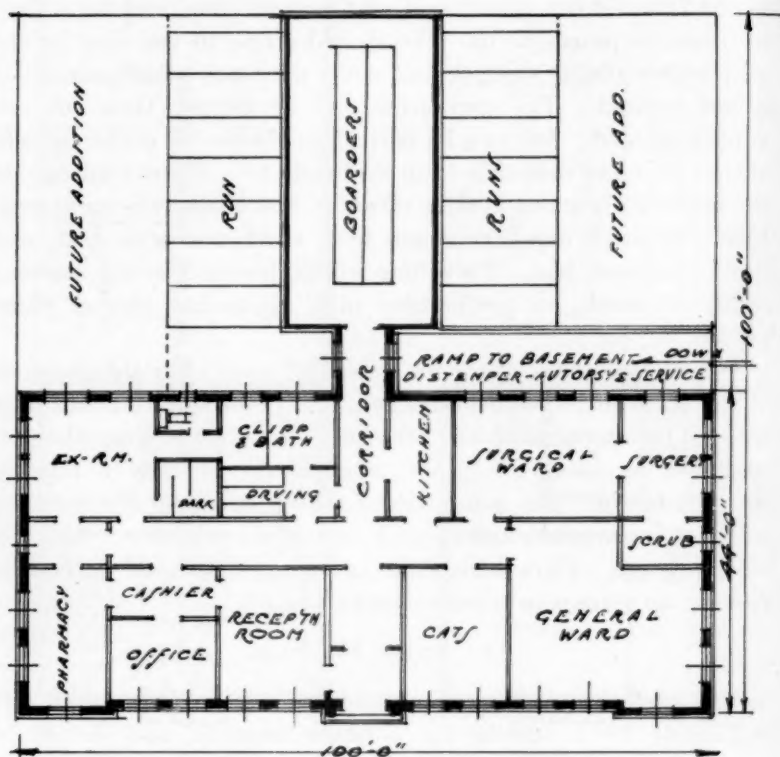


FIG. 38. LARGE HOSPITAL ON 100'-0" X 100'-0" PLOT

thinks, is very practical. Of course the door of each unit opens into the unit itself.

The place of Dr. P., in Russellville, just off the main street, is a solution of a small problem with living quarters added on the upper story. (See figure 37.) The exterior architecture is Georgian, blending well with the many buildings of early American type in town. The main entrance leads us into a small vestibule, serving as an entrance into the reception-room and as an exit from the examining-room. The place is located on an inside lot, and the question of air and light was one not easily disposed of. However, it appears that Dr. P. has a satisfactory place and a year of actual use will show how else the problem should have been solved.

#### THE LARGE HOSPITAL

The large small-animal hospital is usually an outgrowth of a smaller place and, due to its extensive floor area and large demand for window space, will nearly always call for an open or corner lot. A fairly comprehensive list of all the various elements will be the first necessity, and likely some units will have to be combined or eliminated. A few solutions would call for living quarters included on the upper floor and, in others, part of the hospital itself will have to be carried up. A long street frontage will beget long circulations and many retraced steps. Let us look into the hospital of Drs. Smith and Johnson: (See figure 38.) Their place has many good features, but it appears that a more comprehensive study of the preliminary plans would have resulted in a somewhat more logical arrangement.

#### THE ODD-SHAPED LOT

Quite often an odd-shaped lot is available at a price far below the regular list. It may be the result of an unsettled or poorly settled estate, or the encroachment of a gasoline station or other business on the corner of what was formerly a desirable piece of property. Such a lot on first thought may appear to be hopeless, but by giving it the study it deserves, a real worthwhile solution may be found. (See figure 39.) The hospital of Heid Brothers, in Paso del Norte, is a good example. The open approach, looking over a splendid gasoline station, gives the building a feeling of unrestricted, rambling size—an inviting factor to a passing client.

#### THE SUBURBAN HOSPITAL

A hospital moves out into the country because its owner sees certain advantages in such a move. He visualizes runs, well

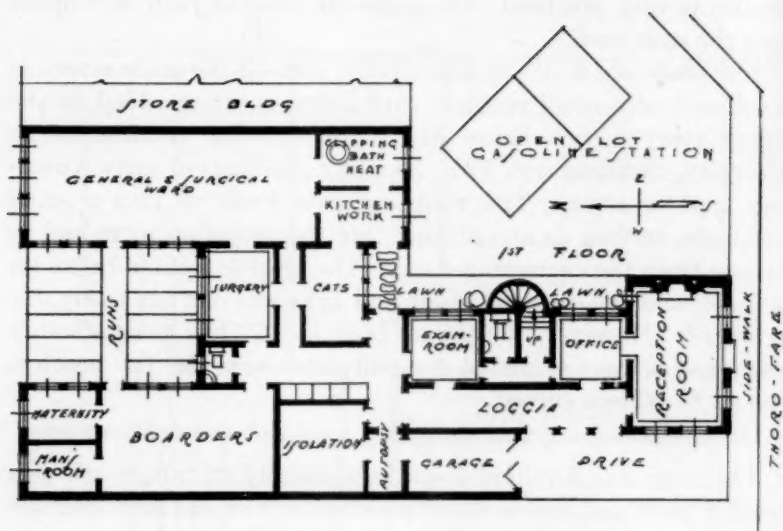
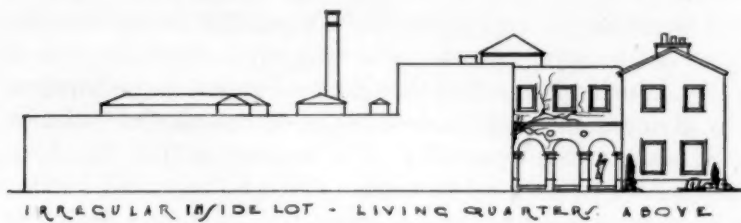
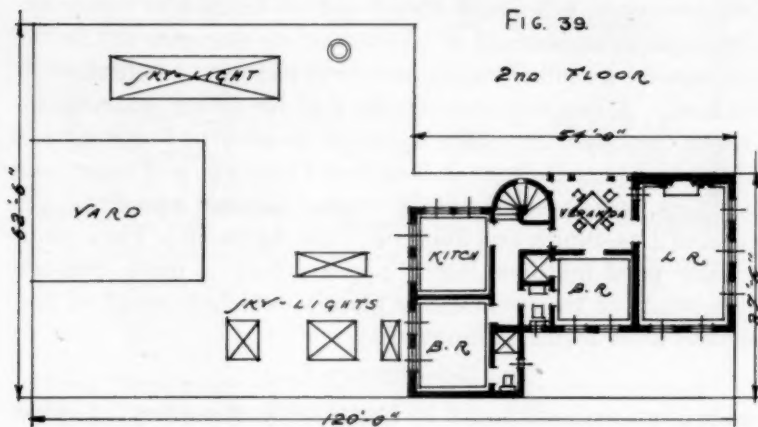


FIG. 39.

2ND FLOOR



spread-out wards, isolations in open spaces, and a bountiful supply of fresh air and light. Suburban hospitals must have good business to support them. The investment would be considerable and the overhead charges high. Part of this extra load could be absorbed by the larger number of boarding dogs that could be accommodated, which group in turn would serve as a nucleus for prospective veterinary business. The accessibility of the hospital from the standpoint of clients living in the city must be well considered and the location should be near one of the most frequented highways to the country. We may then well consider a large place that has one or several collecting-stations in town. In such a place we might expect to find every conceivable accommodation that a veterinary hospital may afford. The plan might well be thought out with a view to future additions and extensions. The building, if set back from the highway, would allow for ample parking space and give the passerby an opportunity to take in the aspect of the whole plant, which should be pleasing and in keeping with the countryside. (See figure 40.) The plant of the Longacre Veterinary Hospitals, Inc., is a good illustration of such an institution. Another suggested lay-out is presented in figure 41. Future additions could be added to both of the protruding wings.

#### THE COÖPERATIVE HOSPITAL

The time will come when the feasibility of a coöperative small-animal hospital in the large city will receive serious consideration. As a matter of fact, this consideration is merited now. If we could eliminate with one stroke the petty jealousies and distrust often encountered among veterinarians, we would rapidly progress to the point where it would be apparent that if at least part of the overhead of a half-dozen or so hospitals could be concentrated into a central plant, under a unified and uniform control, veterinary business could be stimulated appreciably. By concerted effort, now wasted in individual sporadic efforts, small-animal hospitals could be placed on a first-class business basis. The individuality of the veterinarian would not have to be sacrificed, for he still could cater to his private clientele at his office, now conducted as a clinic for the collection of patients for the central hospital. Such a hospital could then be truly the last word in planning and equipment, for, as can readily be assumed, the number and types of patients handled there would be considerable.

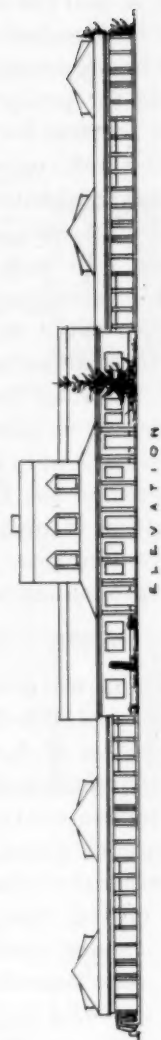
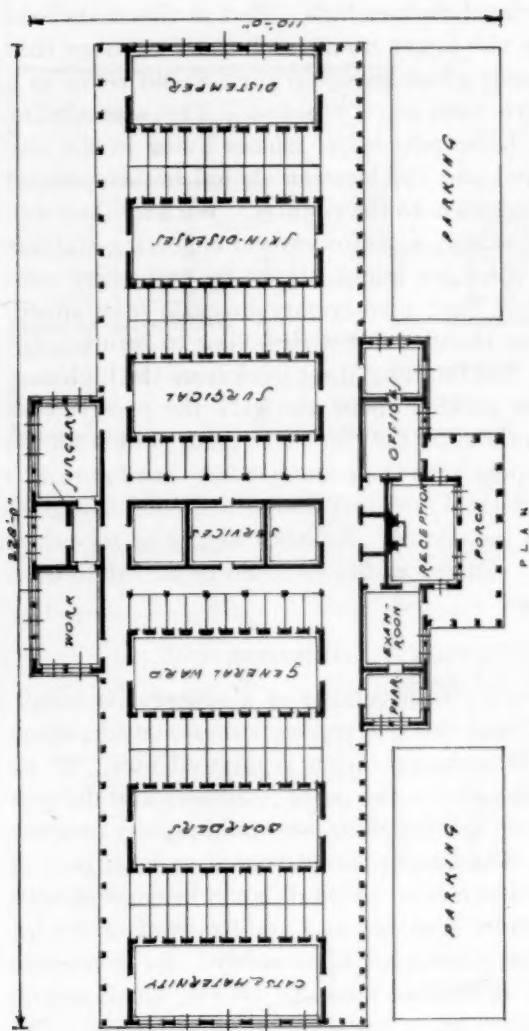


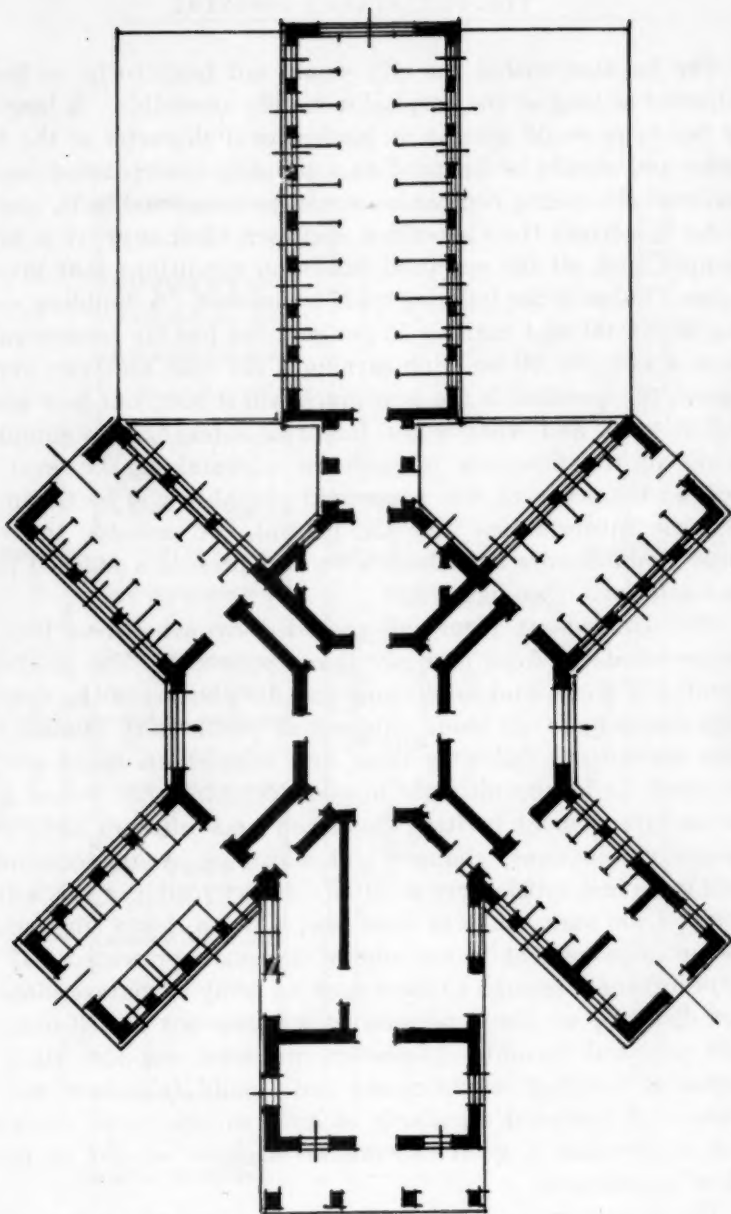
FIG. 40. SUBURBAN VETERINARY HOSPITAL  
APPROXIMATELY 250 KENNELLY - 100 RUN



The location within the city would not have to be so finely adjusted as long as the hospital is readily accessible. A hospital of this type would assume an institutional character of the first order and should be financed as a properly incorporated organization. Financing companies would be interested in it, and in order to attract their attention and earn their support it must comply with all the accepted rules and conditions that give it value. Value in the building trade is not cost. A building costing \$5,000.00 and earning 15 per cent net has far greater value than a \$100,000.00 building earning 8 per cent and vice versa. Again, the question is not how much will it cost, but how much will it earn, and what is the factor of safety? The complete study of the financing of such an undertaking, however, is beyond the scope of this paper and probably will be taken up at some future time. For the present, we assume that all these requirements have been met, and present a finished plan as a solution. (See figure 42.)

Well carried-out plans are preceded by exhaustive lists of requirements of fixed and movable equipment. The plausible number of floors, and subdivision and distribution of the various departments are all made subjects of preliminary studies. A plan carried out following these first suggestions could not be expected to be the ultimate in good planning, but would give us an arrangement inviting discussion and criticism and, with proper eliminations, changes and additions, would eventually terminate in a satisfactory solution. Every reader of this article could, I am sure, make at least one, if not a dozen suggestions for an improvement in any one of the plans presented. If we were fortunate enough to have such an array of mature ideas at our disposal, we could be sure of working out a well-planned and practical lay-out. Moreover, we must not lose sight of technical building requirements and should take care not to violate all accepted standards of good architectural planning. For that reason a good experienced designer should sit in on these conferences.

The veterinary association of a Pacific Coast city has planned a coöperative hospital and it would be well to go over their preliminary plans and see what their ideas are. They have selected a lot 100' x 120', sloping down away from the main street. On two sides it is bordered by two minor streets, with an alley at the back. Since their plans call for a 100' x 116' lay-out, they intend to set the building back four feet from the build-



SUGGESTED LAY-OUT FOR  
SUBURBAN SMALL-ANIMAL  
HOSPITAL

FIG. 41.

ing-line. Nothing has been determined yet in regards to the details and the exterior elevations. It is intended to place the main floor some three feet over the street level and in this manner provide good daylight illumination for at least 75 per cent of a well-equipped basement. A four-car garage and dog-runs occupy a large part of the lot, the building itself being 60' x 100' on the first floor.

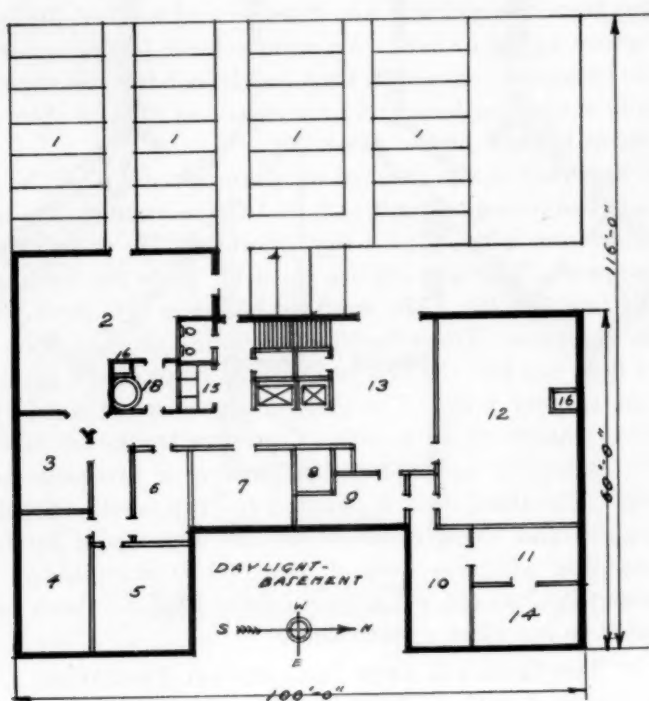
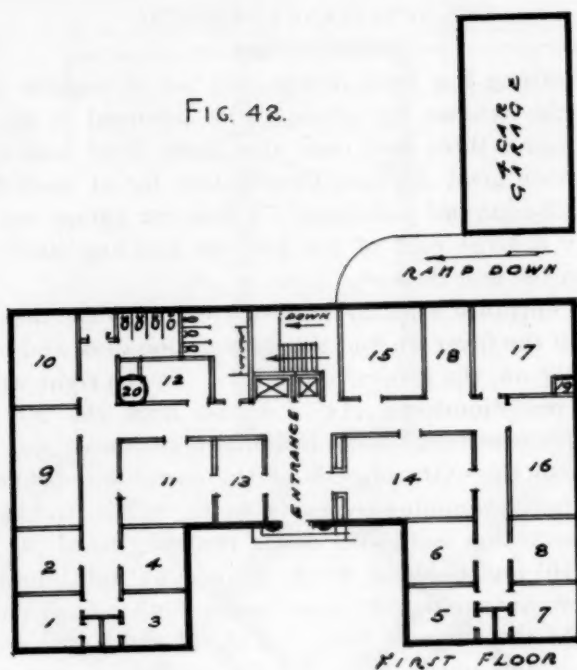
The main entrance leads over a few steps onto the first floor. To the left of the foyer we find the information desk and cashier (13). Further on, the general office (11). To the right we have a spacious reception-room (14). Across from the reception-room a conference-room for professional conferences and meetings (15). On the extreme ends of the corridors we find four offices and four examining-rooms (1 to 8). Close to them we have an observation ward (16) and a receiving ward (9). The pharmacy (10) and isolation ward (17) occupy well illuminated corners. Two automatic elevators convey both animal patients and clients to the different floors. A spiral chute (20) conveys animals from the upper floors to the lower-floor "get ready" rooms. Here the animals are brushed and combed previous to their return to the owners. A staircase leads to the upper floors and the basement. Space 18 accommodates a few reserve kennel-trucks to convey patients from the receiving (9) and observation (16) wards to their proper wards.

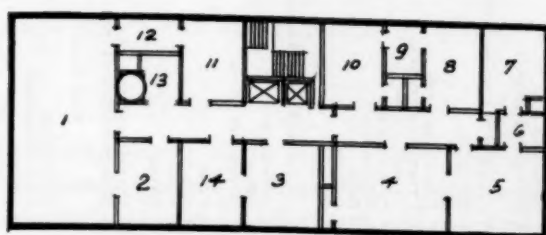
The basement is also reached by a ramp from one of the minor streets. The distemper unit (12) and the morgue (9) are readily accessible from here. The x-ray laboratory (7) is an otherwise useless space. The skin-disease ward (4) joins the bathing and clipping facilities (5). The ward for boarders (2) opens onto the outside dog-runs. Toilet facilities are found on each floor. The second floor has lost the two protruding wings of the main floor. It is the surgery floor. The general and surgical ward (1) has the nurse station (2) at its side. Conveyor trucks are housed at 5. The maternity units (4 and 6) occupy a favorable central position. The third floor is devoted to very small animals, the laboratories and living quarters for an interne and his family. The building will cost around \$150,000.00 unequipped. The equipment list has not yet been completed but has been roughly estimated to run close to \$30,000.00.

#### THE HOSPITAL WITH EDUCATIONAL FACILITIES

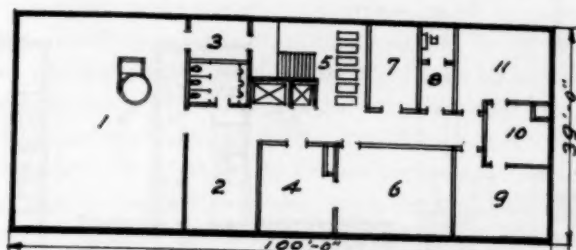
The hospital with facilities for the education of veterinary nurses may be of any size that would afford the material for

FIG. 42.





THIRD FLOOR



SECOND FLOOR

KEY TO FIGURE 42

Basement

- 1 Runs
- 2 Boarders
- 3 Kitchen
- 4 Skin diseases
- 5 Clipping and bathing
- 6 Drugs and supplies
- 7 X-ray
- 8 Destructor
- 9 Autopsy
- 10 Boiler
- 11 Shop
- 12 Distemper
- 13 Loading
- 14 Storage
- 15 Toilet and Shower
- 16 Straw-chute
- 17 Straw-chute
- 18 Get-ready

- 15 Conference room
- 16 Observation
- 17 Isolation
- 18 Trucks
- 19 Straw-chute
- 20 Animal-chute

Second Floor

- 1 General surgical ward
- 2 Nurse station
- 3 Drugs
- 4 Maternity operating-room
- 5 Trucks
- 6 Maternity ward
- 7 Work-room
- 8 Wash-room
- 9 Surgery
- 10 Sterilizer
- 11 Surgery

First Floor

- 1 Office
- 2 Examining-room
- 3 Office
- 4 Examining-room
- 5 Office
- 6 Examining-room
- 7 Office
- 8 Examining-room
- 9 Receiving
- 10 Pharmacy
- 11 General office
- 12 Get-ready
- 13 Information desk-cashier
- 14 Waiting-room

Third Floor

- 1 Cat ward
- 2 Small dogs
- 3 Laboratory
- 4 Living-room
- 5 Dining-room
- 6 Pantry
- 7 Kitchen
- 8 Bed-room
- 9 Bath
- 10 Bed-room
- 11 Special ward
- 12 Drugs
- 13 Trucks
- 14 Laboratory animals



KEY TO FIGURE 43

- Ground Floor**
- 1 Auditorium
  - 2 Clinic and stage
  - 3 Class-room
  - 4 Laboratories
  - 5 X-ray
  - 6 Boiler and shop
  - 7 Laboratory animals
- Small-Animal Hospital**
- 8 Reception
  - 9 Office
  - 10 Examining-room
  - 11 Drugs and sterilizing
  - 12 Surgery wards
  - 13 Surgery wards
  - 14 Work-room
  - 15 Bath
  - 16 Isolation
  - 17 Runs
- Large-Animal Hospital**
- 18 Ante-room
  - 19 Office
  - 20 Watchman's room
  - 21 Feed
  - 22 Cows
  - 23 Sheep
  - 24 Swine
  - 25 Drugs
  - 26 Box
  - 27 Operating-room
  - 28 Recuperating-stall
- First Floor**
- 1 Auditorium
  - 2 Clinic and stage
  - 3 Offices
  - 4 Lecture halls
  - 5 Studies
- Second Floor**
- 1 Studies
  - 2 Dormitories

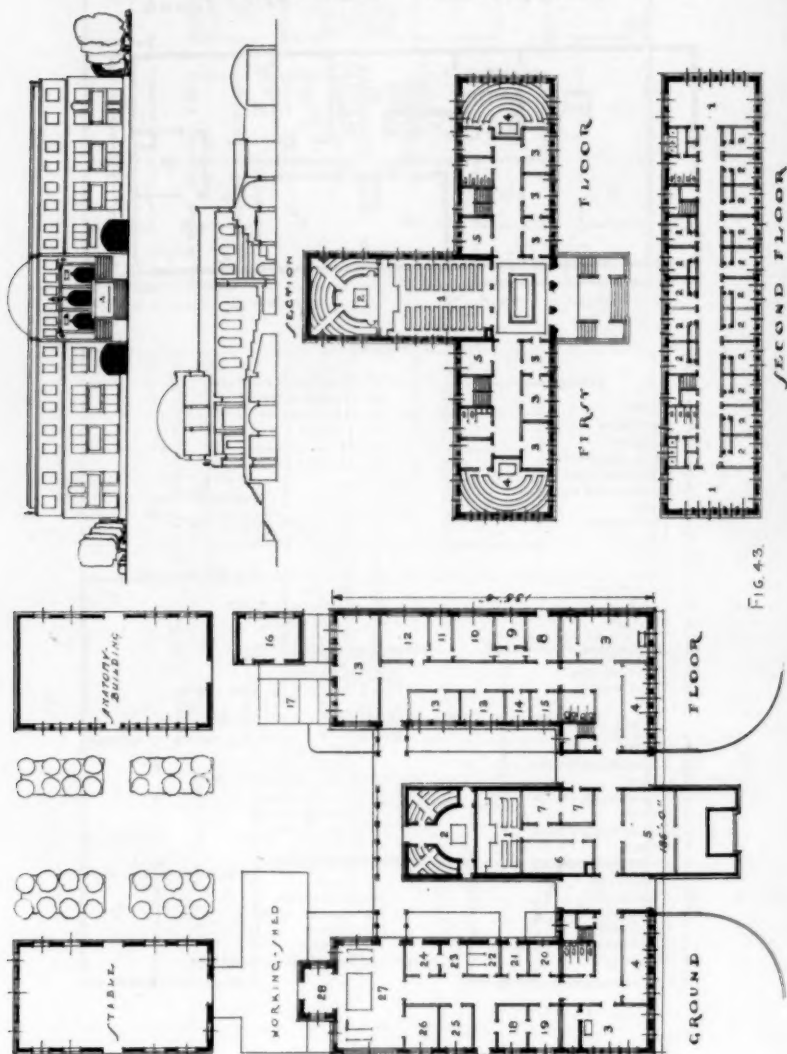


FIG. 43.

instruction. In addition to the hospital facilities we would have to add one or two lecture-rooms and possibly some living quarters.

#### THE VETERINARY COLLEGE HOSPITAL

A veterinary college should have hospital facilities for both large and small animals. These units should represent and express the last thought in veterinary hospital equipment. By that I would rather refer to the method of employment, suitability to purpose and type of construction, much more than their histrionic function. Such equipment should be of that type, cost and character that would place it within the practical need and reach of the prospective practitioner. Hospital arrangement under institutional control must have the character of a commercial undertaking, show its proper profits and losses, and in that manner acquaint the student with factors and facts that he will meet in actual practice. The hospital should serve as a complement to the class-rooms where the various branches of veterinary medicine are taught. It is in the class-room where the theoretical aspect of the profession should be brought out and the student informed of all the methods employed, practical and otherwise. Surgical instruction should not be confused with "commercial" surgery, and instruction in pathology, therapeutics, materia medica, etc., should not enter the hospital to replace actual methods of veterinary practice. There seems to be a tendency to cram students full of raw theoretical material. All good and well, but why not also teach them to use that material and earn themselves a profit? In spite of all idealistic contentions, we must admit that veterinary medicine is studied and practiced by most men for their ultimate profit, to defray their living expenses and build up a reserve.

A university of a southeastern state has such a veterinary college under consideration and it would be well for us to go there and inspect the plans. (See figure 43.) The Architectural Committee of the institution had formulated the following requirements for the guidance of the architects and engineers.

The University has set apart a parcel of land (practically level) 225' x 300'. Thereon is to be constructed a "School of Veterinary Science," the dimensions of which buildings are determined by the most economic assemblage of all the elements required.

The college proper will consist of two lecture halls of about 650 square feet each. These halls will be located on the main floor. On the same floor shall be eight offices, of approximately 220 square feet floor space each. Two of these offices will serve as studies. An auditorium seating

some 250 people and an amphitheatre clinic with animal preparatory rooms should all be parts of the main floor. Two other lecture-rooms and laboratories may be installed in a semi-basement or on the upper floors. The uppermost story should contain no less than fifteen dormitory rooms, with two large study-rooms, all of which could later be transformed into educational rooms as the school expands. Shower and toilet facilities should be ample and advantageously placed. Shops, boiler-room and storage facilities are to be provided for.

Attached to the school building will be a large-animal and a small-animal hospital.

The large-animal hospital will consist of:

An ante-room and office.

A drug-room.

An operating-room with horse-table, foot-bath and stocks. A recuperating stall shall be in connection with the operating-room. Area of operating room will be about 1200 square feet. Provision must be made so that an inclining-seat arrangement could be temporarily installed, for class conference during special operations. A second large box-stall should be readily available from the operating-room. In addition there shall be hospitalization provision for two to three cows, a half-dozen sheep and so many hogs.

A feed-room for all animals will be conveniently located.

One room and toilet facilities will be required for an attendant.

The small-animal hospital will consist of:

A reception-room.

An office.

An examining-room.

A surgery.

A drug-room and sterilizing-room which may be combined.

Three wards of a total floor area of 1500 square feet.

A work-room.

A bathing room.

An attendant's room with toilet facilities.

In connection with the small-animal hospital shall be an isolation building for the housing of infectious cases for special study. A few outside runs may or may not be provided for. On that portion of the ground not taken up by the school proper, an anatomy building will be erected with a floor area of about 3000 square feet. The planning of this building is left for future consideration. A stable building of equal floor area and closely adjacent to the large-animal hospital, of approximately 1750 square feet floor area, must be readily accessible from both the stable and the hospital. As it will also have to serve as a live stock judging pavilion during inclement weather, provision will have to be made for temporary enclosing wall partitions.

The whole group shall express the educational character of its purpose and fit in harmoniously with the other campus buildings.

#### THE EXTERIOR OF A VETERINARY HOSPITAL

The exterior of a veterinary hospital should be a logical development of a good plan. Veterinary medicine, as it is today, is a modern science. For that reason we cannot look very far back for historical examples. The classical styles of Greece and Rome are practically excluded except for the institutions of learning. English Gothic and Norman residential styles of architecture afford excellent examples of what can be done in good substantial buildings. The Georgian period of early American architecture no doubt would lend exquisite

grace to a high-class place, while in most states of the former Spanish possessions, Spanish architecture in its cruder forms would always be appropriate. Exteriors of straight American commercial brick architecture are in many cases very proper. The newest architectural style, "Art Moderne," will bring us new jewels of practical beauty. One word of warning: Do not let some amateur put up a "false front" for you, lest your place be in the same class with the horse that had healing power consistently applied to a "fistula."

The planning and construction of small-animal hospitals is still in its infancy and the writer hopes that, by his effort in suggesting the establishment of a standard for veterinary hospital planning, he has not transgressed too far into fields beyond his reach. He wishes to express his thanks to those veterinarians who were kind enough to submit to him the plans of their hospitals. The future will bring us better veterinarians who will require better hospitals. Let us all work now to prepare for their coming.

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### Rabies Situation in Illinois Improved

The rabies situation in Illinois is very materially improved, according to a report recently made by Dr. W. H. Welch, Chief Veterinarian, to Hon. Stuart E. Pierson, Director, Department of Agriculture. The number of counties under quarantine had been reduced to four, less than half the number one year ago, according to the report.

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### BUREAU TRANSFERS

Dr. V. W. Woolen (Colo. '21) from South Saint Paul, Minn., to Eau Claire, Wis., on meat inspection.

Dr. Edgar Heiny (Ind. '08) from Brookhaven, Miss., to Navasota, Texas, on tick eradication.

Dr. E. C. Hughes (Ind. '16) from Chillicothe, Mo., to Monroe City, Mo., on tuberculosis eradication in poultry and swine.

Dr. H. W. Knoernschild (McK. '14) from Columbus, Nebr., to Harrisburg, Pa., on tuberculosis eradication.

Dr. F. M. Shigley (Mich. '23) from Bismarek, N. Dak., to Chillicothe, Mo., on tuberculosis eradication.

Dr. B. O. Sherrill (Ind. '08) from Indianapolis, Ind., to Terre Haute, Ind., on meat inspection.

Dr. W. J. Conlin (Corn. '20) from Milwaukee, Wis., to Albert Lea, Minn., on meat inspection.

Dr. Robert Jay (McK. '99) from Sacramento, Calif., to Corvallis, Ore., on fluke control.

## ACTIVITIES OF THE FOOD AND DRUG ADMINISTRATION IN THE CONTROL OF MISBRANDED VETERINARY PREPARATIONS\*

By H. E. MOSKEY, *Washington, D. C.*

*Food and Drug Administration, U. S. Department of  
Agriculture*

The members of this Association are no doubt aware of the activities of the Food and Drug Administration during the past few years in eliminating from interstate trade misbranded veterinary medicines, insecticides and fungicides. It appears, however, that there is some misconception as to the actual jurisdiction the Administration has over such products. In so far as branding is concerned, the federal Food and Drugs Act and the federal Insecticide Act have jurisdiction over only labeling and circulars accompanying the shipments of the article. These acts do not have any jurisdiction over false and extravagant claims made for products in newspapers or farm papers, or by radio, etc., nor for claims made in circulars and other advertising material distributed separately. The Post Office Department has jurisdiction over printed matter sent through the mails, and the Federal Trade Commission has authority over unfair trade practices, which includes some advertising. Complaints regarding such practices should be submitted direct to the government agency having jurisdiction.

The Department of Agriculture is coöperating with all government agencies to eliminate false and fraudulent claims made for drugs, insecticides and fungicides. It is also necessary to have the full support and coöperation of the veterinary profession. Without this coöperation the Administration is helpless as far as the enforcement of the provisions of the Food and Drug Act and the Insecticide Act against false veterinary therapeutic claims is concerned. No action can be taken under the laws against a drug product unless the claims are considered beyond the therapeutic limitations of the ingredients as judged by the consensus of present-day reliable veterinary medical opinion. This consensus of veterinary opinion must be established in court. Under the Food and Drugs Act the government is placed under

\*Presented at the sixty-eighth annual meeting of the American Veterinary Medical Association, Kansas City, Mo., August 25-28, 1931.



obligation, where action is taken, to prove that the therapeutic claims are false and fraudulent. The question is frequently asked, "Who determines whether or not the labeling constitutes misbranding?" The federal courts alone have the authority to rule upon the legality of products coming within the scope of these acts. The Department is charged merely with the administrative responsibility of referring cases to the courts for trial when, after a thorough investigation of all the facts, it is concluded that a violation of the law exists.

#### CHEMICAL ANALYSIS THE FIRST STEP

In the Department's investigation of any particular product the first step is to submit the product to chemical analysis. The next step is to determine whether or not the claims made on the labeling express promises in excess of the known pharmacological action of the ingredients individually or in combination. All information available bearing on the subject is obtained. The Department gets from leading veterinarians the actual opinions held by that profession. It may also be necessary for the Administration to have actual tests conducted by competent investigators to determine whether or not the claims made for the particular product are justified.

It must be remembered, however, that these laws were not created to prevent manufacturers from selling legitimate drugs, insecticides and fungicides to the public. Their enforcement prevents dishonest competition in the sale of medicines. The purpose of these laws is to prevent the public from being misled or deceived by the products or by claims made on the labeling. In so far as the language used in the labeling is concerned, the Supreme Court has said, referring to the Food and Drugs Act, that:

The statute is plain and direct. Its comprehensive terms condemn every statement, design, and device which may mislead or deceive. Deception may result from the use of standards not technically false or which may be literally true. The aim of the statute is to prevent that resulting from indirection and ambiguity as well as from statements which are false. It is not difficult to choose statements, designs and devices which will not deceive. Those which are ambiguous and liable to mislead should be read favorably to the accomplishment of the purpose of the act.

Under the terms of the laws the Department has no authority to make public the results of its investigation of any specific product, except in the manner prescribed by the laws, which is in the form of a notice of judgment issued after the case is terminated by the court. The Food and Drug Administration does,



however, give out information of a general character in the form of press notices, radio talks and trade notices. Trade notices are issued as far as practicable to all manufacturers and shippers who are distributing their products within the jurisdiction of the laws as to the legal requirements imposed upon them. The purpose of disseminating such information is to effect a maximum degree of voluntary compliance by that great majority of drug manufacturers who are honestly endeavoring to market legal products. Press notices are issued to the editors of farm papers, poultry journals, veterinary periodicals, and to the press in general, and occasional radio talks are given to enlighten the public on the activities of the Administration in the enforcement of its laws. Copies of these notices may be secured from the Department upon request.

Inasmuch as modern veterinary science does not recognize any drug or mixture of drugs as being effective in the treatment of contagious or infectious abortion of cattle, dysentery or scours of calves, sterility or barrenness, hog cholera, influenza of swine or hog flu, fowl cholera, pullorum disease or diarrhea of chicks, coccidiosis, contagious or infectious roup, chicken-pox or diphtheria, gapes of chicks, blackhead of turkeys, influenza, distemper or strangles, and heaves of horses, active steps have been taken by the Administration to remove products labeled as treatments for these diseases from interstate commerce. Press notices have been issued to the public and trade calling attention to these facts.

#### WORM EXPELLERS MUST BE CORRECTLY LABELED

In view of the importance to the live stock industry of internal parasites from an economic standpoint, an official notice was issued on June 18, 1929, to the manufacturers and to the public through the press that worm expellers must be labeled correctly to meet the requirements of the law. The notice called attention to the fact that no drug or mixture of drugs now known can truthfully be offered to the public as an expeller or vermifuge for all types of worms which may infest poultry or other animals. The unqualified use of the terms "worm expeller" and "vermifuge," without indicating in prominent type the specific worm or worms for which the preparation can be depended upon to be effective, constitutes misbranding within the meaning of the law.

Mineral mixtures, stock powders, conditioners and tonics for live stock, when represented by manufacturers as controlling

worm infestations, are misbranded. Actual tests of some of the products investigated, containing mixtures of ingredients represented in various text-books as having anthelmintic action, showed the products to be ineffective for expelling any type of worm. Critical tests have shown that some drugs when used alone are efficacious in expelling certain types of worms, but if mixed with other known anthelmintics may be rendered non-efficacious.

Many other preparations bearing false and fraudulent claims receive constant attention by the Administration. These include such products as mineral mixtures, stock powders, conditioners, tonics, cod-liver oil preparations, liniments, salves, caustics, blisters, disinfectants, antiseptics, fly-killers and repellents, flea and lice powders and liquids, dips for animals, mange ointments, lotions and liquids.

Within the past few years there has been a tendency on the part of some manufacturers of mineral mixtures to make many false and misleading claims for such products, particularly in collateral advertising. The claims vary and give the impression that the feeding of mineral mixtures to live stock, including poultry, will cure or prevent serious infectious diseases, prevent worm infestation, expel worms, purify the blood, prevent bloating and digestive disturbances, clean the digestive and intestinal tract, and increase milk and meat production. In view of this, the Administration, on April 5, 1931, issued a notice to the public and trade calling attention to the fact that mineral mixtures are misbranded when represented as preventives or treatment for infectious diseases of farm stock or as preventives of maladies caused by worms, or as efficient worm expellers.

#### BAN ON THE WORD "HEALTH"

The so-called "conditioners" and many other products have often been found to be labeled for increasing weight or milk production. The use of the word "health" in the labeling of products of this character has been found to be badly abused by manufacturers. On January 20 and April 4, 1930, press notices were issued to the public and to the trade relative to the unwarranted use of the word "health" in the labelings of drug preparations for animals and to the effect that milk production of dairy cows cannot be increased by the feeding of any drug or combination of drugs now known to veterinary science. A number of the so-called "health liquids" have been seized in

the enforcement of the law. A judgment, the notice of which was not long ago published by the Department, was secured against a product known as "Cow Tone, a Milk Producer." The false and misleading statements appearing on the label and in the literature sent with the product claimed that the product, when fed to cows, "increases the milk" and that "nothing has been so consistently popular as Cow Tone in making milk because there is nothing else so consistently good. Takes the place of green pastures and makes it pay." The preparation was further lauded as "the secret of success in the science of milk making."

#### SO-CALLED TONICS MUST CONTAIN SIGNIFICANT AMOUNTS OF PROPER INGREDIENTS

A survey of preparations labeled for increasing egg production, fertility and hatchability of eggs, revealed the fact that many such products are on the market. Since no known drug or combination of drugs, when fed to poultry, can be considered to increase egg production, the Department, on June 11, 1930, issued a press notice to the public and the trade that drug products labeled in this manner are misbranded, and interstate shipments of such products are subject to seizure action and the manufacturer liable to prosecution. The chemical analysis of many of these products indicated that the medicinal ingredients were present in insignificant amounts and that they had practically no physiological activity. Others contained therapeutically significant amounts of ingredients that might properly be labeled as tonics or appetizers. The Administration does not, however, regard products of this character as being capable of increasing egg production. It may be mentioned here that the use of the word "tonic" in the labeling of drug products is considered to constitute misbranding unless the product actually contains therapeutically significant amounts of ingredients known to have tonic properties.

As a result of our activities within the past few years in removing from the channels of interstate commerce products labeled for white diarrhea of chicks, the claims for many of these products were changed to "diarrhea medicine." Some of these products contain astringent ingredients, but since diarrhea is merely a symptom of many diseases and the use of an astringent will not remove the causative factor, the Administration regards such products labeled as diarrhea remedies as misbranded.

Our work on worthless and misbranded antiseptics for human and animal use resulted within the past few years in an investigation of more than one thousand products, most of which were tested bacteriologically. The investigation revealed that many manufacturers did not have their antiseptics tested bacteriologically. Some were under the impression that a chemical such as carbolic acid would be antiseptic no matter how weak a solution was used or in what menstruum it was carried. Hundreds of so-called antiseptic preparations were found misbranded as to antiseptic properties and bearing false therapeutic claims. In fact, two of the so-called antiseptics examined actually contained living bacteria.

#### ACTION AGAINST INTESTINAL ANTISEPTICS

Action has also been taken against products labeled as intestinal or internal antiseptics. When we take into consideration the length of the intestinal tract and the resulting dilution of the small amount of medicament with the intestinal contents, it is very doubtful if there is any such thing as an intestinal antiseptic. Furthermore, there is no information based on scientific tests available that there is any justification for such claims. The Administration, therefore, has not hesitated to take action against products labeled in this manner, regardless of the composition. Since so many products represented as intestinal antiseptics for veterinary use, found on the market, contained various forms of sulpho-carbolates, bacteriological tests were conducted more than two years ago to determine whether or not they had any antiseptic action in the presence of serum or other organic matter. The tests showed that products of this character have no antiseptic action in any dilution against *B. typhosus* in the presence of organic matter. As an evidence of the concurrence in this conclusion of contemporary medical opinion it may be of interest to this Association to note an answer to an inquiry on intestinal antiseptics appearing in the *Journal of the American Medical Association*, of June 14, 1930, under the heading, "No Intestinal Antiseptic":

To the Editor:

Is there recognized any drug which, if taken by mouth, constitutes an intestinal antiseptic? If so, is a triple sulpho-carbolate such a substance? \* \* \*

Answer: There is really no such thing as an intestinal antiseptic, if that term is defined as equivalent to disinfectant, there being no known influence capable of killing microorganisms in the living intestine. If the term is defined to include inhibition of the growth and diminution in the number of intestinal microbes, then diet (milk diet in most adults) would

constitute perhaps the most important influence of this kind. Mild mercurous chloride might qualify as an efficient drug with a tendency in that direction. Phenol sulphonates (sulpho-carbolates) are worthless.

The market is particularly flooded with these so-called intestinal antiseptics recommended for the prevention and treatment of disease conditions involving the digestive tract. The Administration has issued a notice to the public and the trade that medicines recommended as antiseptics or germicides, to be administered to farm live stock by way of the mouth, and represented as being effective in the treatment of any infectious disease condition involving the digestive tract, are misbranded under the Food and Drugs Act.

#### REMEDIES FOR NECROTIC ENTERITIS

In a survey of preparations for hogs, we find that hundreds of manufacturers are distributing products labeled for the disease known as "neuro" or necrotic enteritis. Given proper sanitary precautions and the use of a soothing diet, the disease, in the early stages, is more or less self-limiting in nature, and since spontaneous recoveries are not unusual, users of ineffective preparations often accredit the cure to the worthless medicine. Preparations recommended for the prevention and cure of this disease, consequently, have had wide usage. The claims are based on the sodium hydroxid content which ranges from two to five per cent in the product as sold. The labeling directs that one quart of the remedy should be diluted with fifteen gallons of water and added to three bushels of oats which are fed after ten hours soaking. The amount of sodium hydroxid which an average-size pig would consume daily from eating this mixture would probably not exceed one to two grams, which would presumably be changed to sodium carbonate. It is reasonable to assume, from our knowledge of physiology, that this amount of sodium hydroxid or sodium carbonate, upon entering the stomach, would react with the hydrochloric acid and be changed to sodium chlorid before reaching the intestinal tract where the actual lesions of the disease are located. There is no evidence, as far as the Administration can determine, that any properly controlled tests have shown that there is any drug or mixture of drugs which can be depended upon to prevent or cure necrotic enteritis of hogs. It is apparent that these products cannot be truthfully represented to the public for this purpose. Preliminary report of a test conducted for the Administration of two representative samples of products of this character showed no therapeutic



value in the treated pigs as compared with the untreated or controlled pigs.

Under the federal Insecticide Act, mange preparations are considered misbranded unless the labeling of the product, often including the name, is properly qualified to show the specific type of mange for which the product can be depended upon as an effective treatment. This act, in addition, requires that if the preparation contains any inert ingredient, its label must bear a statement of the correct names and percentage amounts of each and every inert ingredient, or, in lieu of this, a statement of the correct names and percentage amounts of each and every active ingredient, together with the total percentage of the inert ingredients. Hundreds of mange preparations distributed in interstate commerce have been investigated during the past few years. Many of these products have actually been tested on animals. While most of them were found effective in the treatment of sarcoptic mange, none of the products tested was found to be effective for demodectic mange of dogs or other animals.

#### NOTICE SERVED ON MANUFACTURERS OF DOG REMEDIES

On July 8, 1929, an official notice was issued by the Department to manufacturers of dog medicines. This notice informed the manufacturers that in view of the fact that there is no drug or mixture of drugs now known to veterinary science to be a dependable treatment for such dog ailments as distemper, the so-called "running" or "barking" fits, black tongue (with the exception of products containing adequate amounts of vitamin G), or demodectic or follicular mange, interstate shipments of products labeled for these diseases are subject to seizure action under the law.

A rather large shipment of various dog remedies labeled for the prevention and treatment of black tongue, distemper, and "running" fits of dogs was seized at New Orleans in the enforcement of the law. This seizure case was contested and brought to trial on May 19, 1931. The case was considered to have an important bearing on future enforcement of the Food and Drugs Act against misbranded veterinary preparations, and the outcome was a victory for the government. The products involved were "Crisp's Tung-Tone (Black Tongue Preventive)," a mixture composed largely of calomel, baking soda and charcoal: "Crisp's B. T. Black Tongue Remedy," a capsule containing calomel, soda and charcoal, and a liquid consisting mainly of



milk of magnesia, precipitated chalk, charcoal and water; "Crisp's Distemper Remedy," found on analysis to be largely kerosene, spirits of turpentine and pine tar; and "Crisp's Hot Shot Running Fit Remedy," a mixture of spirits of turpentine, petroleum oil, tarry material, milk of magnesia and water. A seizure action was instituted against the preparations on the ground that the therapeutic claims on the labels were false and fraudulent.

Some of the witnesses for the government were Dr. William J. Lentz, Director of the Small Animal Clinic, University of Pennsylvania; Dr. Alexander Glass, Professor of Canine Medicine, University of Pennsylvania; Dr. M. R. Blackstock, of Spartanburg, S. C.; Dr. Hamlet Moore, of New Orleans, La.; Dr. I. M. Cashell, of Washington, D. C.; Dr. George A. Wheeler, of the U. S. Public Health Service; Dr. J. E. Shillinger, of the Bureau of Biological Survey; and Dr. P. H. Hartman, of the U. S. Bureau of Animal Industry Experiment Station, Bethesda, Maryland. Other veterinarians present at the trial in the interest of the government were Dr. E. P. Flower, State Veterinarian of Louisiana, and Dr. F. J. Douglass, of New Orleans.

#### TRIAL LASTS FOUR DAYS

The trial lasted four days, and Dr. William J. Lentz was subjected to the longest cross-examination of any of the witnesses for the government. Dr. Lentz was on the stand practically all day and was cross-examined for four hours, during which time it was impossible for the counsel for the defense to break down his excellent and highly scientific testimony. In addition to the expert testimony of these veterinarians, the government was permitted to give the results of experiments conducted with some of these preparations at the Experiment Station, Bethesda, Maryland.

The case for the claimant or defendant was handled by counsel from Spartanburg, South Carolina, and New Orleans. Fifteen witnesses testified for the manufacturer. Most of these witnesses were dog fanciers or kennel men from the South who testified to the effect that they had used the various preparations and they effected a cure for the various disease conditions indicated on the labeling. One of the witnesses was a medical practitioner in the vicinity of New Orleans and one was a registered veterinarian of Tennessee, but not a graduate of any veterinary institution.

The interesting feature of this case was the fact that all the witnesses for the claimant testified to the effect that they had strictly followed the directions of the literature accompanying the black tongue remedy, in which it was stated that canned salmon should be fed to the dogs during the treatment. The witnesses for the government apparently convinced the jury, particularly from the results of the experiments, that salmon fed in the early stages of the disease would undoubtedly result in a cure, and that the ingredients of the remedy itself would have no influence on any favorable termination of the disease (black tongue). In Dr. Wheeler's testimony he outlined the results of his work, showing the relation between the disease, black tongue in dogs, and that of pellagra in man. He showed conclusively that both result from deficient diet. He further testified that salmon fed to dogs having black tongue would effect a cure in the early stages, and that a diet deficient in vitamin G could and does produce black tongue in dogs.

#### RELIANCE PLACED ON TESTIMONIALS

Counsel for the claimant also introduced about 75 depositions taken from purchasers that were satisfied with the results obtained from the use of the various remedies. They also introduced something like a thousand favorable testimonial letters. According to the testimony offered by Mr. S. A. Crisp and Mr. B. S. Bonebrake, owners of the company, they had relied almost entirely on the testimonials received to show the efficiency of the preparations rather than on authoritative veterinary opinion.

Judge Wayne G. Borah charged the jury in part as follows:

It was the claimant's (S. A. Crisp Canine Co.) duty, however, to make such investigation as was necessary to enable him honestly to make statements concerning the curative or therapeutic effect of his preparation. If he did not do this, but acted with such gross carelessness and indifference to the truth of the representations contained in the statements as to warrant the conclusion that he acted fraudulently, you are at liberty to so find, and in that event should return a verdict that the drugs are misbranded.

The verdict of the jury sustained the claims of the government and pronounced the products to be misbranded as charged in the libels.

While the force of the Administration is inadequate to permit it to proceed instantly against all misbranded veterinary products which may be distributed in interstate commerce, approximately 8,000 preparations have been investigated during the past few years, representing at least 400 manufacturers. A large majority

of these manufacturers have either voluntarily taken the misbranded products off the market or have revised the labelings or formulas to meet the requirements of the laws. Court action under the laws is relatively infrequent compared with voluntary compliance.

The Administration, in the enforcement of the Insecticide Act, has done and is doing much work in making chemical analyses and testing disinfectants bacteriologically. Products labeled for external parasites such as lice, fleas, flies, screw worms and grubs, or for various forms of scabies of live stock, have been studied. It is gratifying to add, however, that in practically all cases where the manufacturers' attention was called to the objectionable statements, changes were made to bring the labels into strict accord with the facts. It is because of the coöperation evidenced here, as in many other of our activities, that we feel much is being accomplished to the material advantage of the manufacturers and purchasers of drugs, insecticides and fungicides.

#### STANDARDS OF PHARMACEUTICAL PRODUCTS MAINTAINED

During the past four years, the Administration has given continuous attention to standard pharmaceutical products to assure a high degree of accuracy in their compounding. The physician and the veterinarian usually have no means of determining whether or not a tablet or capsule contains the amount of ingredient claimed upon the label. A tincture of nux vomica which is deficient in strychnin may look just like one that meets the pharmacopoeial requirements. Variations from the standards in products of this kind can be determined only by analysis. The Administration has analyzed thousands of samples of these products. As already indicated, this has not been a sporadic investigation but has been continuous. Numerous cases, in which the variations from standard have been regarded as exceeding the limits justified by the best commercial manufacturing processes, have been referred to the courts. The courts have indicated their appreciation of the seriousness of the offenses by the imposition of substantial fines, in many cases exceeding \$1,000. As a result the quality of pharmaceuticals now available to practitioners is as a rule excellent. Our survey is showing that a larger and larger percentage of products examined comply closely with the official or declared standards. It is the Administration's purpose to continue actively until all pharmaceuticals found on the market subject to the act are manufactured under conditions of control which insure their accuracy.

## POST-VACCINATION PROBLEMS IN SWINE\*

By HENRY HELL, *Wilton Junction, Iowa*

The subject matter compiled here for your consideration is being presented from the viewpoint of clinical observations in the field, our conclusions drawn accordingly, using such information as comes to us from the research worker to dovetail with our observations in the field, and always keeping in mind that these practice methods that have withstood the test of time for a long period are the best standards for our guidance.

For the past decade, we have come more and more to the realization that the *condition of the hog at the time of the administration of the serum and virus* is our greatest problem. At times there are conditions present in the herd that may, and do, materially interfere with successful immunization of that herd, or a part thereof. Just what these conditions are is very little understood at this time, but we do know that we were in error in the past when we charged all post-vaccination trouble to scant dosage, low-potency serum, or avirulent virus. Experience has taught us that we may use the greater part of a serial of serum against several serials of virus without a sign of a reaction and then have a herd go completely "haywire," for no visible cause. Then we may use the balance of the serial without further trouble.

When these conditions confront us we are forced to look to something else than our serum and virus for the source of our trouble. We know in a general way that thrifty pigs, raised on clean ground and free from parasites and filth-borne infections, rarely give us any trouble, while the unthrifty pig, heavily infested with parasites and affected with the so-called "necro" or other pen infections, are frequent sources of trouble.

Then we have herds that have every appearance of being thrifty and free from infection, and appear to be in the best of health, that give us a violent reaction, sometimes with fatalities up to 20 per cent, the reaction beginning on the fifth or sixth day after vaccination with serum and virus of known quality and ample dosage. It is generally believed that virus, superimposed on an infection, otherwise of low pathogenicity, but present at

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the time of virus administration, may, by lowering the resistance of the animal or increasing the virulence of the otherwise apparently harmless infection, bring about this violent reaction. *S. suispestifer* and *B. suissepticus* have been mentioned frequently as playing a part in this condition.

#### LOW-POTENCY SERUM

The principal qualifications in anti-hog cholera serum may be summed up under two heads: potency and purity. The potency of anti-hog cholera serum is dependent on the use of a hyper-immunizing virus of high virulence and on the type and individuality of the hog used for serum production. Purity, of course, depends on the handling of the blood after it leaves the hog. Contamination of serum may take place with the producer or the user. Because of the unfavorable surroundings that usually go with hog vaccination, it is reasonable to suppose that contamination of serum more often takes place with the user than with the producer who has every safeguard at his command.

The best method known to the practitioner for avoiding serums of an undesirable grade is for him to confine his patronage to producers who are known to strive to produce the best that skill and modern equipments can attain. Many laboratories go beyond set regulations to attain their own standards in relation to both purity and potency. It is unfortunate, however, that there are still a few laboratories whose aim it is to produce serum and virus as cheaply as possible and still comply with regulations. Products of this bargain-counter variety should be avoided by all good practitioners, in order to safeguard their own interests, because, sooner or later, the lack of quality will manifest itself in the results obtained. Just a word as to the handling of serum. While serum is not a highly perishable product, it is well to remember that exposure to high or changing temperatures or exposure to the sunlight does it no particular good. And as serum does not improve with age, it is best when used relatively fresh.

#### SIMULTANEOUS VIRUS

The virulence of simultaneous or field virus is probably the most important factor in the conferring of a solid and lasting immunity. It should be of the most virulent strain, developed in very susceptible, fast- and clean-breaking pigs. Its phenol content should not be more than the 0.5 per cent required by B. A. I. regulations. Virus should be regarded as an extremely



perishable product and should be handled with the utmost care, avoiding exposure to high or changing temperatures and it should not be exposed to sunlight. Constant refrigeration from the time it is produced until it is used is absolutely necessary for safety. Virus should never be used after its expiration date. While experiments bear out the fact that virus in infinitely small doses produces hog cholera with constant regularity, there is no evidence at hand at this time that would warrant us in reducing our virus dose below the 2-cc minimum in general use.

#### FARMER VACCINATION OF SWINE

Since the advent of granting permits to administer serum and virus, to others than qualified veterinarians, we have had to reckon with what is known as "farmer" vaccination of swine. It is pretty well conceded that more than 75 per cent of post-vaccination troubles accrue from vaccinating at a time when the herd is not in condition to receive such treatment and, whereas, it taxes to the utmost the ability of the seasoned practitioner to recognize the contraindications and to avoid them, it would be rank folly to suppose that the farmer permit-holder, without training or experience, could successfully cope with these conditions.

At best, farmer vaccination is a hit-or-miss, trust-to-luck proposition. When pigs die with hog cholera following vaccination, it must be granted that an outbreak of hog cholera has been created that has all the dangers to the community of a natural outbreak. Putting a live virus in the hands of the untrained man is the greatest outrage ever perpetrated against animal disease control. Why men who stand high in the ranks of the profession should have, in the early days, foisted such a monstrosity upon the live stock industry, is beyond comprehension.

In a general way, manufacturers of serum, who find a ready market for their products with the qualified veterinarian, do not care to sell to the lay permit-holder because he buys in small volume and often has trouble. And, as every laboratory must depend on the reputation of its products in the field, the products must be intelligently used as well as intelligently made. Therefore, it naturally follows that the products from the best laboratories do not go to the lay permit-holder.

#### FEEDS AND FEEDING

Feeds and feeding must be considered in the practice of swine immunization. It is necessary also that we consider that different



feedstuffs are used for economic reasons in different parts of the country. We shall consider here the feeding methods ordinarily practiced in the Corn Belt, where the rations are almost wholly made up from hard grains, with some protein supplement or dairy by-products. Because such grains as corn, oats, barley, rye and wheat are grown in quantity on the farms where hogs are fed, rations consist almost wholly of these grains.

On most of our well regulated farms we find the pigs fed on hulled or ground oats, ground barley, rye or wheat, the rye and wheat being ground with either oats or barley. This is fed either dry, in a self-feeder, or as a slop, corn and tankage being added as the pig grows older. Tankage and oil meal are the most commonly used protein supplements. Skim-milk and buttermilk are desirable when they can be had. Probably the most important item in our ration is plenty of free range in a pasture of alfalfa, clover, rape or sweet clover. An ideal ration for a pig, both before and after vaccination in this section, is a moderate allowance of a mixed grain ration with a small amount of oil meal added, fed either dry or in slop, and with plenty of free range in a pasture of legumes.

Too high protein rations have been blamed for certain types of post-vaccination troubles. It has been claimed also that certain proteins sensitize the animal to the tolerance of serum. So far we have nothing to show that the proteins of ordinary grains sensitize the hog to anti-hog cholera serum. The over-feeding of proteins is not a common occurrence, because our native grains are nearly all below and not above the protein requirements of a growing pig. Therefore, it seems reasonable to believe that overfeeding on proteins is not a common error under Corn Belt conditions. On the other hand, we have the herd that is fed on corn and water with a blue grass or timothy pasture, a clear case of protein insufficiency. This is of rather common occurrence. The importance of a good legume pasture cannot be overestimated. Exercise and green forage seem to be ideal for keeping up a perfect digestion and normal bowel movement. Green legumes are rich in proteins, vitamins and organic forms of calcium and phosphorus, all of which are valuable additions to the grain ration. We believe that pigs so kept are in the best shape available in this section for the serum and virus treatment.

In a great many sections a lot of ground limestone and other minerals are fed to hogs with the hope that they will digest them. I am firmly of the opinion that the way to feed minerals prop-

erly is through the grain ration, to have the minerals contained in organic compounds and in a digestible form, as in the ordinary grains, and to make up the rations from grains that have in them sufficient minerals to carry the animals through.

#### SO-CALLED SERUM BREAKS

Under this heading we refer to that condition presenting a clinical picture of hog cholera on from the fifth to the ninth day after vaccination—the condition that in the past we have attributed to scant dosage or low potency of serum. In the light of our incomplete knowledge of today, it would seem that we are somewhat justified in believing that virus superimposed on some bacterial infections that are in themselves harmless may, either by lowering the resistance of the animal against virus or by increasing the pathogenicity of the bacterial infection or of the virus itself, bring about this troublesome condition. It is a well-recognized clinical fact that pigs suffering from necrotic enteritis bear serum and virus treatment poorly.

Research evidence points to *S. suispestifer* as the primary invader in necrotic enteritis and to the other organisms found in the lesions as secondary invaders. Some research men have failed to produce this condition experimentally. From work done but not yet published, we learn that certain strains of *S. suispestifer*, when injected into susceptible pigs simultaneously with virus, will produce death in less than 60 hours, while injections of this same organism alone will sicken but will not kill the pigs, and the same virus with serum but without the *S. suispestifer* produces no reaction. *B. suissepticus* also is suspected of playing some part in these so-called breaks, although the ordinary strains of *B. suissepticus* found in this section are not sufficiently virulent to cause much disturbance unassisted. It seems that there is a great difference in the virulence of the different strains of both *B. suissepticus* and *S. suispestifer*. What concerns the clinician most is to know how we are to diagnose these conditions that so materially interfere with successful immunization, before the administration of serum and virus. How are we to recognize these latent conditions in herds that have every appearance of freedom from disease.

Some smooth-haired herds, having every appearance of being thrifty and with fairly clean surroundings and with absolutely no evidence of any infection of any kind, will fall down on you. You may at that time be using a serum that you have been using

for quite a while and that has been thoroughly tested out in your own practice, and still you will have these conditions occur. The point that I wish to make is: How are we to recognize that this herd is unfit for vaccination? Personally, I am free to confess that I see no way by which we can recognize it at the present time. It seems to me that there is a world of work to be done on hog diseases other than hog cholera, and that we have much to learn as to how to avoid these post-vaccination troubles or problems, whatever you want to call them.

#### VACCINATION DURING THE INCUBATIVE STAGE OF HOG CHOLERA

While this sometimes occurs, it is not a serious obstacle. The field variety of hog cholera as a rule will affect only a small number of the herd at first, before the whole herd is taken down. If this condition is met, only a small number of the herd are affected and the losses are not serious. What I mean to say is this: You have a herd of hogs that has every appearance of being free from cholera. You go in and vaccinate, and on about the second or third day you have hogs coming down with hog cholera. There is no question that hog cholera was present in that herd. Under those conditions there is only a small percentage of the hogs that are affected. While we have losses accruing from vaccination in the incubative stage of cholera, those losses are very rarely serious.

While experiments show us that serum injected more than 48 to 60 hours after inoculation with a virulent virus has little or no curative action, those of us in the field have often injected pigs showing temperatures of 106 or 107, for no other reason than to get rid of a small quantity of serum left in the bottle, and have seen those pigs show improvement from the next day on. So the question of the curative value of serum, while not definite, cannot be entirely ignored.

Right or wrong, it has been my thought for years that herds carrying a purely virus infection would respond to a marked degree to the antitoxic action of serum, while virus associated with secondary infections would not give any response at all. In the treatment of sick herds, hope sometimes exceeds good reason and we treat hogs visibly sick and have a high percentage of recoveries. In other herds, where the disease has made less headway, we get a much higher mortality. Herds that exhibit a bad breath antemortem or excessive petechiation on post-mortem have always given me a high mortality, as based on the

relative physical condition of the herds at the time of treatment.

#### BABY PIG VACCINATION

There seems to be some difference of opinion as to what is meant by the term "baby pig." Should we consider all pigs not weaned from their dams, regardless of age, as baby pigs, or should we apply some definite age limit in our classification of baby pigs? For arbitrary reasons, I have considered all pigs below the age of four weeks in the "baby pig" class. My experience has convinced me that a solid immunity may be imparted with unfailing regularity to all thrifty pigs over four weeks old by the use of a liberal dose of virulent virus with potent serum.

While there is no doubt that solid immunity may be imparted to pigs less than four weeks old, the unfailing regularity may not be so constant as in older pigs. I believe there is sufficient evidence at hand at this time to say that it is better practice to vaccinate pigs two weeks prior to weaning than to vaccinate within two weeks after weaning, during the time the pig is adapting itself to a new mode of living. I do not believe that nursing in any way interferes with the acquiring of a solid immunity. I consider pigs from six to eight weeks old, due to be weaned at nine to eleven weeks, the ideal age for immunization.

#### VACCINATION SHOCK

Under vaccination shock we refer to that condition met in pigs within a few minutes after being injected with serum and virus. It is manifested by trembling, unsteady gait, nausea, convulsions, coma, cyanosis of mucous membranes and unpigmented skin, and collapse. Before the term "shock" was invented we called it "fainting," because the pig generally passed completely out for five or ten minutes, then came out of it, no worse for the attack, in fifteen or twenty minutes.

Considerable research work has been done to determine the cause or causes, but so far nothing very definite has been established. It seems that this condition is more prevalent in some localities than in others. In considering some of the causes blamed for this condition, the following clinical observations may be of interest. Intraperitoneal administration of serum seems to be more apt to produce the condition than intramuscular injection. This may be more apparent than real, as only clear serum should be used intraperitoneally, while both blood and clear serums are used intramuscularly. Clear, heated serum is

more often the cause than the unheated, defibrinated-blood serum.

The very young pig is the most susceptible, all things considered. This may be because of its greater susceptibility or to the larger amount of serum administered per pound weight. Pigs from which feed has been withheld for 12 hours before vaccination seem to suffer less than those handled with their stomachs filled. Certain chemicals contained in the serum, such as phenol and bean extract, certain changes in the albumins of the serum or reactions between the chemicals and the albumins during the heating process, may or may not be the cause.

I have here an article by C. E. Larson, of Tilden, Nebraska, on vaccination shock. He says:

About a week ago I discovered that heated serum was the cause of this condition and nothing else. To prove my statement I used heated serum on about ten pigs until I noticed shock, and then changed to unheated serum and noted the results. The last week I have injected about 1,000 head and I have not been able to produce shock in a single pig. I have not taken them off feed as I have done in the past, but recommend a limited ration for about two weeks after injection. I do not believe that this tells the whole story. It seems to me, from chemical work done on the albumin group of serum, that heating creates some changes in the globulins. I believe that we will have something more or less definite on this point, probably within the next year.

Our knowledge of the cause of vaccination shock at this time is insufficient to form any definite conclusions. There has been no attempt made to review all the literature published on the various angles of post-vaccination problems, for the reason that the subject matter in this paper was to be presented from the viewpoint of clinical observation.

#### DISCUSSION

DR. DAN W. HURST: Dr. Hell has presented an extremely interesting paper. It is of unusual interest to every practitioner who had to do with the handling of diseases of swine. He has covered the field thoroughly from the practitioner's standpoint. There is little that I can add to this paper. It is especially valuable because the information that he has given us is based upon many years of actual contact with these problems in the field.

As practitioners, we have made some progress in eliminating some post-vaccination troubles. In considering these problems it is interesting, and amusing, to go back to the early days of the use of serum and virus in the field and to recall the conditions under which the work was done at that time. You men who engaged in the use of serum and virus when it was first used in the field will recall some of the conditions that prevailed.

In those days serum and virus were not the refined products that we are receiving today. There was not much supervision over the production of those products in the beginning, and I think that there is evidence to show that there was a great deal of serum put on the market and used in the field that could be regarded as serum of low potency. In some cases there were products sold which were not even the serum of a hog. Today it seems that there is hardly room to doubt the potency of serum or the virulence of virus that is coming from a dependable concern manufacturing those products. After serum or virus leaves the manufacturer's hands, it is up to the practitioner



to see that those products are probably handled and administered. In the early days of vaccination you will recall that our methods were pretty crude. The method of getting serum from the bottle into the animal was to pour it into a dish or an open vessel of some kind and set it in the lot or in the barn where the work was being done. The dirt, filth, and all of the infection of the barnyard were blown into it. When I went through the serum laboratory with Dr. Salsbery, yesterday afternoon, and observed how scrupulously clean it was, and how careful they were to protect their products from contamination, I could not help but contrast that procedure with what happened to serum in the early days. It was filled with about all the contamination and dirt that it was possible to get into it. We injected that solution into swine, and it is amazing to know that they survived.

We expected to get what were referred to as post-vaccination abscesses in those days, and we were seldom disappointed. Sometimes it was not only a matter of getting abscesses, but vaccination was often followed by an acute infection—a needle-wound infection. I am inclined to think today, although I am not a pathologist, that from those acute swellings that followed the injection of serum there was plenty of malignant edema, and that, no doubt, came about from the contamination of serum in the hands of the practitioner.

We have seen the error of those things and we have changed our methods of handling serum and virus; we are more cautious in the refrigeration of virus, and more careful in protecting serum against contamination. We are more cautious in ascertaining the condition of the herd to be vaccinated, determining whether or not that herd is in good condition to be vaccinated. As Dr. Hell has stated, we exercise more care in the handling of that herd after vaccination, the regulation of the feed, and the sanitary condition of the lots in which the animals are kept. In that connection I shall mention one point with which I have had some sad experience. That is in connection with the vaccination of swine in lots where garbage, refuse from a slaughter-house, or where dead animals are being fed to swine. I do not know what the experience of others has been, but I have found in a number of cases an acute needle-wound infection where animals were subjected to such conditions.

Regarding the question of baby-pig vaccination, there has been a great deal of discussion. We have one class who advocate it, and another class who do not believe in it. Personally, I have died a little hard in coming to the point where I admitted that I believed in the vaccination of pigs before weaning; but if there are disadvantages in the vaccination of these young animals, there are also some advantages.

Some of you have vaccinated herds following the weaning period, and thought they were in good condition to be vaccinated. Perhaps they were being fed a rich ration, being crowded for rapid growth. Following that vaccination, in five or ten days, you had sickness in that herd and a considerable loss; and you wondered what the condition was. In the old days it was customary to pass the buck to the serum company and tell the owner, that something must have been wrong with the serum. I think that we have outgrown that. When that happens two or three times on the same farm, and if the owner still has confidence enough in you to call you back to try the operation again, you try to determine what is causing the trouble and wonder what to do. Perhaps it is found that they are infested with worms; and particularly lungworms. You then decide to find some other period of that animal's life in which to vaccinate pigs on such farms. If you try vaccinating them before they are weaned, your results are much more satisfying. There is an advantage in the vaccination of pigs before the weaning period in some cases. It seems that if we take the evidence at the present time, there is considerable proof to show that pigs can be successfully immunized before the weaning period.

It seems to me that it is up to practitioners to deal with these problems themselves, to study the cause of their trouble, and to quit trying to pass the buck to serum companies or to someone else when they do get into trouble. When we get into that frame of mind we will solve our own problems very largely. We are past the day, gentlemen, when we can lay the blame on serum and virus if we are getting those products from reliable producers.

DR. C. E. SALSBERY: I came in as Dr. Hell was completing his paper, and I did not hear all that he had to say; but I do not believe that it is for me to



discuss the practitioner's problem in relation to swine vaccination so much as it is for the practitioner to do it himself. What Dr. Hurst has just told you, I believe, covers the subject very largely from the standpoint of every practitioner who deals with the vaccination of hogs against hog cholera.

With regard to the post-vaccination shock that was mentioned, I can recite some experiences I had last fall in going out and observing some cases with Dr. Imler, of the local B. A. I. staff. At that time neither one of us was satisfied that what we saw indicated heating of the serum was entirely to blame for the trouble. Since that time, more work has been done; and it seems probable now that possibly the heating of serum does have something to do with it.

One herd that we investigated was a few miles north of Saint Joseph. The practitioner called me and said that he started to vaccinate a herd of pigs and had to stop because of the reactions that followed in from twenty to forty minutes after the injection of the serum. We drove out there and advised him to continue the vaccination and that we would make observations to see whether we could do him any good. The method of vaccination was in the axillary space. The pigs were, I should say, about six or eight weeks old. They had been weaned just recently. They were not in the best physical condition. As to parasites I cannot say, but some of them looked as if they harbored intestinal worms. Upon questioning the owner, we learned that these pigs were being fed largely on wheat mixed with milk, a little barley, and pasture. It is not necessary for me to describe the condition as we say it, because I think you all know what it looks like.

We made the observation that the pigs in this herd which had the most severe reactions were the younger ones and those that appeared to be in the best condition. Upon further questioning the owner, we were told that they had been fed the last time the evening before. The practitioner had started vaccination in the morning and had trouble. When we arrived it was several hours later and the reactions that appeared then were not so severe and the percentage of pigs affected was not so high. We tentatively came to the conclusion that it may have been either some effect from the feeding of wheat—there is now some doubt as to that—or that the period of fasting had not been sufficiently long.

Another herd that we investigated, a few days later, was at Smithville, Missouri—a very fine herd of Hampshire pigs, a little older. They had been weaned for several weeks. These pigs were being fed on an exclusive ration of wheat in self-feeders, and grass, but nothing else. The veterinarian vaccinating these pigs started in the morning. The pigs had been taken from the feeder the evening before. They had been starved only over night. I think there were about eighty-five or eighty-seven in the herd. He vaccinated about half of them, when the owner became so alarmed, as well as the practitioner himself, at the reactions that were occurring, that they stopped vaccinating. I received a call to come and investigate. Getting in touch with Dr. Imler again, we made a trip to this farm. We got there about three o'clock in the afternoon, and advised the doctor to continue vaccinating. The serum was being injected into the peritoneal cavity, at the same time giving virus, and, I believe, hemorrhagic septicemia bacterin. The pigs that were vaccinated in the afternoon were much slower in showing shock than those that were vaccinated in the morning. Those that were shocked in the afternoon were not so badly shocked as those vaccinated in the morning. The ones that were most severely shocked were the younger pigs. As far as the condition of the herd was concerned, we could not distinguish any particular difference between individual pigs, because they all seemed to be in about the same well-nourished condition.

The conclusion of that observation was similar to the one that we made at the other place a few days before, namely, that it was quite apparent from the statement of the veterinarian and from the statement of the owner that the pigs that were vaccinated in the afternoon were less severely affected than those vaccinated in the morning. The conclusion made at the time was that possibly these pigs had not been sufficiently fasted, and that the longer fasting may have accounted for the diminished reactions that occurred in the pigs that were vaccinated in the afternoon.

Another herd which was reported, but which I did not see, was at Olathe, Kansas. The veterinarian was vaccinating, I believe, on Sunday afternoon. It was an emergency vaccination, and he was using clear, heated serum. The pigs, as reported by the doctor, were young pigs. They had been weaned just recently or were about to be weaned, and had not been fed wheat. After vaccinating a few of them, reactions occurred and they were very violent, according to the practitioner's report—so violent that he became alarmed and called me on the telephone. I advised him to discontinue the use of the clear serum and finish vaccination by using whole-blood serum.

The next time I saw the doctor he reported that he had the same trouble with the balance of the herd that he vaccinated with the whole-blood serum, although he thought that the reactions were not so severe. This case rather confused the conclusions that Dr. Imler and I had made from the observations of the two other herds, where clear, heated serum was used exclusively with what we thought was insufficient fasting. It did not seem to make any difference whether the serum was injected into the peritoneal cavity, subcutaneously, or into the axillary space. There is possibly this difference—that the intraperitoneal injections caused reactions in a little shorter time and were more severe than when the serum was injected subcutaneously or deeply into the axillary space.

I am informed, through communication with the Bureau of Animal Industry, that since that time considerable work has been done investigating this problem. It seems that the status of the situation at this time points to the fact that probably the heating of serum is responsible for these shocks. It is reported that heating the serum above 58° C. causes changes in the proteins of the serum, which are responsible for the trouble. Serum is heated, as you know, to at least 59.5° C., which is 1.5 degrees above the point where it is now felt the changes in the protein occur. It does not seem possible that heating 1.5 degrees above a certain point would be sufficient to explain such a condition. We are not in a position to say that it is or it is not, but we are awaiting developments.

In regard to the production of serum, which Dr. Hurst mentioned, you all know that almost phenomenal improvements have been made in the last few years; even within the last year and a half or two years such improvements have been made in the equipment in serum plants as to make the production of the products as nearly 100 per cent perfect as possible. There are still some shortcomings. These, of course, will be taken care of in time.

In regard to the heating of serum, I will say that I should hate very much to see anything happen to the program of production that would prevent it. As far as I am concerned, I can see no use whatever for having anything but clear, concentrated, heated hog cholera serum. I know there are practitioners who do not agree with me. I talked with one just the other day who said that he had always used the whole-blood serum, and felt there was no reason for him to change. He was at the serum-plant, as it happened, at the time we were clarifying serum. I took a bucket that contained the refuse we were taking out of the serum, held it up and poured it into another vessel. It looked like thick molasses. I asked him why he considered it did the hog any good to inject that mass of material. He said he did not suppose it did any good, but it was just a habit and belief that he had and it was hard for him to change. I should hate very much to see the process of the production of serum changed, because, with the equipment now available and in use in all modern plants, the heating of serum is necessary to use it.

I am sure that many cannot appreciate the great advantage this modern equipment has added to the production of anti-hog cholera serum over the method used a few years ago. As I said before, on account of this equipment and improved methods of handling, I can see no reason in the world for making anything but clarified, heated hog cholera serum.

Roxie, a big German Shepherd, was sentenced to death at Battle Creek, Mich., by a justice, following a formal hearing, on the grounds that the dog was vicious.

## WORLD-WIDE PREVALENCE OF LIVE STOCK DISEASES\*

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### MUTUAL RELATIONSHIP OF COUNTRIES

When Mercator, the celebrated geographer of the 16th century, first associated with his maps the mythological figure of the god Atlas supporting the world on his shoulders, he stimulated the imagination of the student youth of successive generations. In fact it is probable that nearly every boy before his 'teens has contemplated with amazement the conception even in mythology of a man supporting this great globe, for his teacher had very likely taught him that it was approximately 25,000 miles in circumference and experience had convinced him that a single mile as measured from the swimming hole to the dinner-table at home was no inconsiderable distance.

Our present-day conception of the size of the earth on which we live is probably very different from that of generations which have preceded us. We are given to understand that the earth's crust is contracting. Modern means of communication and transportation are tending to reduce space and to bring foreign countries into close relationship. Hence whether we view the situation geographically, geologically, socially, or commercially, it seems that our old sphere of habitation is growing smaller. The prosperity and welfare or the misfortune of countries on the opposite side of the globe are reflected in our own body politic. Mr. Owen D. Young has said: "Our economics are necessarily international because of our interdependence upon one another." Much of the wealth and well-being of these United States and other countries is dependent upon the live stock industry. It, accordingly, naturally follows that we can not be otherwise than interested in diseases affecting domestic animals in countries throughout the world.

The internationalism of this problem of disease is well demonstrated by the organization in recent years of the International Office of Epizootics, at Paris, France, one original purpose of

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which was to gather and bring to the knowledge of governments and their sanitary administrations facts and documents of general interest concerning the presence of epizootic diseases and the means employed to fight them. It is further shown by action of the First Inter-American Conference on Agriculture, which met in Washington, D. C., during September, 1930, and recommended that the Pan-American Union make a survey of problems in which several countries have a common interest, including those relating to live stock, and make a consistent endeavor to promote community of interests in all the countries affected by any such problems.

#### SOURCES OF INFORMATION

It is not possible to know the exact live stock disease situation in all parts of the world. Most countries maintain an official live stock sanitary organization and issue bulletins periodically scheduling occurrences of certain reportable diseases. A considerable number of governments, however, do not provide for a veterinary corps and consequently furnish no official reports of this character. In such instances information must necessarily be limited to that obtainable from returning travelers or from American consuls or other foreign government officials stationed in a particular country. Reports from these sources are very helpful although when the information is of other than official origin, data relating to specific diseases may be of questionable value. We can be reasonably accurate in appraisal of the general disease situation in fifty or more countries comprising probably two-thirds of the land area of the earth. There is more or less variation, however, in the diseases reportable and it will be difficult to judge with accuracy as to the prevalence in some countries of such conditions as tuberculosis, infectious abortion, hemorrhagic septicemia and hog cholera which are not always included in official reports. Certain other diseases are quite generally recorded.

#### WIDE DISTRIBUTION OF ANTHRAX

One of the most widely distributed diseases is anthrax, for this, an infection that becomes implanted in the soil, exists to some extent in practically all countries of the world. Fortunately the disease is carefully controlled by most governments. This, however, has not been the case in many countries, especially those of the Orient, where the soil has become so contaminated

as to result in the common infection of animals. Such countries need not be surprised if other governments place due sanitary restrictions upon their hides, wool, and other animal by-products.

#### THE GREAT PROBLEM OF FOOT-AND-MOUTH DISEASE

Economically, however, anthrax must necessarily take second place to foot-and-mouth disease, which, owing to its extreme contagiousness, presents a world-wide live stock menace. In 1930, the 71st Congress passed an act positively prohibiting the importation into the United States of cattle, sheep, or other domestic ruminants or swine from any country in which rinderpest or foot-and-mouth disease exists. Under this law the Secretary of Agriculture was directed to give public notice as to countries considered infected with one or both of these diseases and on July 11, 1930, he issued an order specifying 46 countries, including colonies and islands, as infected. Countries infected with foot-and-mouth disease do not necessarily harbor rinderpest. On the other hand it is probable that few if any countries in which rinderpest exists are free from foot-and-mouth disease. Of the aforementioned 46 countries, 18 were located in Europe and 6 in South America. Today, with the exception of Australia, the only large area of the world free from foot-and-mouth disease is the North American Continent. In a large percentage of infected countries the disease has become permanently implanted and under existing conditions live stock sanitary authorities are helpless to accomplish other than some degree of control. It is not unusual to receive reports that this disease in a given country has taken on a benign character or that it has "died out." As it is not a self-eliminating disease, however, it is reasonable to assume in these cases that the infection is more or less firmly established and likely to increase in virulence at any time. In fact, reports of this tenor do not tend to increase confidence in the ability of the live stock sanitary organization in control to accomplish eradication of the disease.

#### RINDERPEST SUSCEPTIBLE OF ERADICATION

Rinderpest, on the other hand, partakes more of the nature of a self-eliminating disease, the heavy mortality incident to outbreaks being favorable to a reduced volume of infection.

Original extension of rinderpest into Europe from Asia was associated with the great wars of invasion and during the recent World War the disease moved with armies as far westward as



Poland, leaving that country with a post-bellum problem of rinderpest eradication, fortunately accomplished in due time.

In 1841, rinderpest appeared in Egypt. Extending southward, it reached southern Africa in 1896, northern and southern Rhodesia, the Transvaal, Cape Colony and British Protectorate becoming infected. With the assistance of Prof. Koch and a devised system of preventive inoculation, the disease was eradicated in South Africa in 1903, leaving Central Africa the only section of that continent now known to be infected.

In comparatively recent years a consignment of cattle from India destined to Brazil was landed en route in Belgium. These cattle introduced rinderpest into both Belgium and Brazil, but it was finally eradicated. The disease has now been driven back from Europe and, with the exception of possibly Turkey and the Balkan region and sections of Central Africa, it may be considered to be practically confined to the Far East. We may conclude that since there are adequate restrictions in effect by most large countries, rinderpest need not be considered a world-wide menace. Experience, however, tends to a belief that any government which allows the importation of cattle from a country in which rinderpest exists in inviting trouble. Of all the serious live stock diseases it will probably lend itself most easily to eradication measures. The Eleventh International Veterinary Congress, held at London, England, in 1930, went on record as believing that sufficient knowledge of practicable methods is now available to eradicate rinderpest within a reasonable period of time in any country which will provide adequate facilities for their application.

#### CONTAGIOUS PLEUROPNEUMONIA MORE PERSISTENT

What has just been said of rinderpest will be true to some degree in the case of contagious pleuropneumonia of cattle. This disease, however, unlike rinderpest, is not inclined to be self-eliminating. This is due to the chronic type of the affection, as frequently observed, which tends to the establishment of persistent centers of infection.

The general prevalence of contagious pleuropneumonia in Europe, including Great Britain, and its introduction into the United States in 1843 from England, led to organization of a United States Treasury Department Cattle Commission, forerunner of the Bureau of Animal Industry, and the establishment of animal quarantine stations at Atlantic Coast ports of entry,

under an Act of Congress in 1883, thus providing adequate facilities for a 90-day quarantine upon purebred cattle imported from Europe.

Eradication of contagious pleuropneumonia in the United States, the completion of which was accomplished in 1892, tends to show that elimination of the disease is not at all impossible. Europe, formerly a hotbed of infection, is now practically free from the disease. This can not be said of Asia, although just how extensive the disease may be at this time in Russia, China, and throughout India can not be stated. Japan, a progressive country in matters relating to veterinary science and control, still harbors contagious pleuropneumonia. This is also true of Australia. The disease was introduced into the latter country in 1858. It is reported that a veterinarian practicing at that time in Melbourne urged eradication by slaughter. This, however, was not effected. It became the established practice to immunize cattle with fluid from the lungs of affected animals and the infection still exists in certain parts of Australia.

South Africa received the infection of contagious pleuropneumonia from European cattle in 1854 and it was not until the authorities adopted the rigid measures of destruction of all diseased and in-contact animals that the Union of South Africa was freed from infection about 1917. The disease is declared still to exist in certain regions of Africa north of the Union.

#### TUBERCULOSIS CLOSELY RELATED TO INTENSIVE AGRICULTURE

As it is not commonly a reportable disease it will not be possible to know the exact extent to which tuberculosis is prevalent throughout the world. The disease is officially reported from China and such outlying regions as Portuguese East Africa, Algeria and Nigeria and is known to be generally prevalent in central and western Europe.

The Channel Islands, home of the Jersey and Guernsey cattle, are practically if not absolutely free from infection. This may seem strange in view of the location of these islands, immediately off the coast of France, where over 10 per cent of all cattle, according to some authorities, are tuberculous and also in consideration of the proximity of Great Britain where the disease is known to be very prevalent. This, however, may be due to the long-time policy of the Channel Islands authorities to exclude all outside cattle other than in some instances for immediate slaughter and to prohibit the return of any native cattle once

leaving the Islands. This, apparently, has not only served to protect from disease but also to assure purity of the Jersey and Guernsey breeds.

Tuberculosis is said to be practically unknown in central Africa and on many islands such as Iceland and Sicily; also among cattle of the plains of eastern Europe, but it is particularly prevalent in the central and western countries of Europe. It seems to stand in close relation to the development of intensive agriculture and we may conclude that few countries in which dairying and the breeding of purebred cattle are prominent in the program of live stock husbandry can claim exemption from this disease.

#### • INFECTIOUS ABORTION A SUBJECT FOR INTERNATIONAL INVESTIGATION

Another disease which we might consider here is infectious abortion of cattle. This is not commonly a notifiable disease. Hence it is but infrequently included in general reports given out by governmental authorities. It is reported, however, from various countries of Europe, including Great Britain, Sweden, Denmark, France, Germany, the Netherlands, Italy and Austria; also from far-away Rhodesia in southern Africa and is said to be prevalent in South Africa, India and Australia. Hutyra and Marek state that infectious abortion is widely spread in all sections in which intensive stock-farming is in vogue. It seems safe to say that this disease is virtually one of world-wide dissemination. Dr. John R. Mohler, Chief of the United States Bureau of Animal Industry, who is in a better position to speak advisedly on this subject than any other man, has declared infectious abortion to be the most serious single live stock malady in the United States, this because of financial losses and the discouragement of live stock owners whose efforts toward control have been unsuccessful. The recent International Veterinary Congress at London passed a resolution to the effect that, in view of the very widespread occurrence of infectious abortion of cattle in all civilized countries, an international scientific investigation should be carried out.

#### FEW COUNTRIES FREE FROM RABIES

Rabies occurs throughout the world. Only a few countries can claim freedom from the disease. These for the most part are of comparatively small area and have been willing to pay the

price of restrictions upon his majesty the dog which would not only accomplish eradication of the infection but also guard against its introduction. Great Britain, Norway, Sweden, Denmark, Finland and the Netherlands are among the countries to be free from rabies; also Australia and New Zealand have escaped infection. Otherwise there are few if any countries of prominence that can claim exemption. From countries of the Atlantic Coast of Europe across the Continent to Japan and the Philippines; from Morocco in northern Africa to the Union of South Africa and from Canada southward on the Western Hemisphere into the great countries of South America, wherever man accompanied by his faithful companion, the dog, has trekked, there will be found the trail of rabies. There is every reason to believe that rabies on the whole is on the increase and that it presents an especially difficult problem in countries or regions where infection has extended to wild animal life. In a paper recently presented at a meeting of the Scientific Society of Rhodes University College, by Dr. R. Paine, mention is made of the problem of rabies in South Africa. Dr. Paine says:

It is to be deeply regretted that the fears of our earlier veterinarians have been realized and that recent outbreaks show that infection has now become firmly established in our wild fauna. The wild mongoose and the genet cat are widely infected and human beings especially children are obtaining infection from them. Of course these animals can transmit to other wild and domesticated animals so the question at the present moment is decidedly grave.

Thanks to the toilers in science of former years, we have a clear comprehension of the nature and characteristics of this disease and now need more especially to direct attention to its prevention and eradication, effective measures for which are well known.

Great Britain has demonstrated that rabies not only can be eradicated but also excluded from a country. From 1903 to 1918, Great Britain was free from this infection. During the latter year the disease was introduced through some violation of the rigid quarantine regulations. The British authorities contended with outbreaks during the following three or four years and by enforcement of their muzzling order accomplished eradication in 1922. Since that year no case of rabies has been reported from Great Britain, thus demonstrating what can be done when a country has the fortitude to enforce adequate restrictions without fear or favor, including a six-month quarantine upon import dogs.

## HEMORRHAGIC SEPTICEMIA WIDELY DISTRIBUTED

In speaking of hemorrhagic septicemia of cattle, Hutyra and Marek state that the disease occurs everywhere. On the other hand it is declared by those who should be in a position to know that hemorrhagic septicemia of cattle has never been reported from the island of Jersey and that it does not exist in Great Britain. While other countries may be like fortunate, we know of none making this specific claim and in any event believe there need be no hesitancy in saying that hemorrhagic septicemia (by which is to be understood those various diseases produced by varieties of the *Bacillus bipolaris septicus*) will be found to exist very generally throughout the world.

## NOT POSSIBLE TO DISCUSS FULLY ALL OTHER DISEASES

It will not be possible in the space devoted to this subject to discuss various diseases which are prevalent in many countries or zones. Brief mention, however, might be made of the following:

First, surra, due to blood infection with *Trypanosoma evansi* and distributed through the region of southeast Asia and northern portions of Africa; also nagana, the somewhat allied disease of central and southern Africa, commonly called the tsetse fly disease. This, due to infection with *Trypanosoma brucei*, is even a more destructive disease than surra. It is interesting to know that nagana was described by Livingstone, the great English missionary and explorer, in 1857, and suggested by him as due to the sting of the tsetse fly.

Second, the tick fevers or piroplasmoses of cattle, covering a natural area of distribution on the Western Hemisphere extending from 38° north latitude to 35° south latitude. There are thus included as tick-infested certain southern portions of the United States, the West Indies and Mexico, with the exception of the desert sections and higher elevations, and also countries of South America north of the 35th degree of latitude. Somewhat resembling our tick fever in the United States are the piroplasmoses occurring in other parts of the world such as that found in countries of central Europe, the tick fever of New South Wales, Australia, and the East Coast fever of South Africa. In the Union of South Africa, East Coast fever is classed as the pest incomparable. A systematic campaign of dipping is now under way in the Union and the tick is being rapidly exterminated. It is reported that in southern Rhodesia there are at present nearly three thousand cattle tanks, dealing with approximately 2,500,000



head of cattle. While the disease is scheduled for eradication from South Africa, it is still widely spread and enzoötic in the central portions of that continent.

Third, glanders, an ancient malady mentioned by Aristotle and later recognized by Vegetius, about 400 years following the birth of Christ. Glanders is without doubt becoming reduced in extent. This is probably a result of the replacement of the horse with machine power, the consequent elimination of horses from large cities with their insanitary stables and the introduction of mallein and the laboratory tests as diagnostic agents. Some countries today, including Great Britain, Norway, Sweden and Australia, are reporting entire freedom from this historic disease.

#### CONCLUSIONS

This, though a somewhat superficial review of the world-wide distribution of live stock diseases, leads to a few very definite conclusions. One is that these maladies entail an enormous economic loss. Take, for instance, infectious abortion with its destructive complications. No one can question the heavy tax to the live stock industry of the United States from this disease. It has been estimated that the financial loss to the cattle industry of this country from infectious abortion amounts to at least \$50,000,000 per annum. A multiplication of this amount by the 15 to 20 fold, necessary in order to include all other areas in which the disease probably exists, would represent a tribute to this infection of approximately 50 cents per year from each inhabitant of the earth. There might be added to this the toll of rinderpest, which in but one province of India, with less area than the state of Arizona, caused the death of more than 17,000 cattle during the past year. If we then include the possible 20 to 30 per cent reduction in value of the millions of cattle which pass through outbreaks of foot-and-mouth disease in various countries annually, there would be no need to take into account anthrax, hemorrhagic septicemia and other less serious infections in order to appreciate the tremendous economic tax from diseases, some of which are preventable.

A second conclusion is that in addition to the economic phase of the matter there is a direct bearing upon the health of mankind. Many, although not all, of the diseases we have been discussing are intimately related to human health. For instance, glanders in horses is not infrequently communicated to man with fatal

results. Anthrax is one of the important industrial diseases of many countries. The relation of rabies to human health is indicated by the wide distribution of Pasteur institutes throughout the world. The one in Mexico City, Mexico, has a record of 10,000 patients in 26 years, and the rabies service of the Institute of Algeria is reported to have treated 2,229 patients during the year 1929. Tuberculosis, communicable especially to children through the milk of tuberculous cattle, and the more recent findings as to infection of man with the *Brucella abortus* through the ingestion of infected milk and meat, or through handling infected tissues or otherwise, are further illuminating examples of this association between the infection of animals and the human family.

A third conclusion is that growth and development of the world's population are dependent upon the control of diseases both of animals and plants. In a recent article, Dr. L. O. Howard, internationally known entomologist of the United States Department of Agriculture, has referred to the extinction of gigantic forms of flesh- and plant-feeding vertebrates of a former age, owing to inability to adapt themselves to changing conditions. He has indicated that during this changing period it is the smaller vertebrates that have persisted and that insects have been growing smaller and smaller and more highly specialized. The inference would seem to be that whereas it was the huge animals of forest and jungle that threatened the existence of primitive man, the menace to humanity today is more especially from the smaller forms of parasitic and bacteria life.

The International Statistical Institute of the League of Nations, at Geneva, has estimated that in 1930 there were more than two billion human beings on the earth. In May, 1927, the League estimated the world's population at 1,960,000,000. According to these figures the globe's net gain in population averages over thirty million a year. This growth has been made possible largely by conservation of the world's food supply, accomplished through the untiring research and efforts of scientists. A popular writer in a recently published book has rightly called these men "Hunger Fighters." Among them are those who, over a long period of years, have improved the type of food-producing animals in a way to increase the world's food supply economically. The fruits of their efforts, however, would have fallen into decay had it not been for those who have devoted their lives to discovering the true nature of destructive diseases

and to their control and eradication. No man maintaining a good conscience in the practice of our profession or in live stock sanitary work, either in the laboratory or the field, needs to offer an apology to any one. He is engaged in no mean calling for he becomes a conservator of life and health and a contributor to the progress of the world.

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### Seizures Under the Food and Drugs Act

In October, the federal Food and Drug Administration seized 89 consignments of foods and drugs found to violate the national pure food and drugs law, according to an announcement of the U. S. Department of Agriculture. Seizures included the first shipment of canned tomatoes found to be substandard under the McNary-Mapes amendment to the Food and Drugs Act and which were not labeled with the substandard designation required by the amendment.

The Administration also sent to the Solicitor of the Department cases involving 43 stocks of food and drugs shipped interstate in violation of the Act, with recommendations for prosecution of the shippers. October actions under the law involved a wide variety of foods and drugs, including liniments, and preparations alleged to be "cures" for influenza, sore throat, rheumatism, gout, and other maladies. Four stocks of substandard anesthetic ether also were seized.

A case concluded in October necessitated close coöperation among federal, state and city officials, which resulted in the seizure of practically a carload of salted lake herring. The fish, unfit for food, were shipped from Bayfield, Wis., to Atlanta, Ga. Federal examination proved the fish to be adulterated under the Food and Drugs Act, in that they contained decomposed material. Quick action by the officials prevented the decomposed herring from reaching prospective consumers.

Late in the month, the Solicitor of the U. S. Department of Agriculture ordered the seizure of two separate consignments of drug products variously labeled as being "guaranteed to reduce weight, 2 to 4 pounds" when placed in the bath and as being "healthful, refreshing, invigorating." Curative claims for rheumatism, gout, neuritis and neuralgia were made on the labels of some of these products. Such claims constitute false and fraudulent labeling under the Food and Drugs Act.

## THE VALUE OF MEAT INSPECTION\*

By J. S. JENISON, *Kansas City, Kans.*

*Inspector in Charge, U. S. Bureau of Animal Industry*

Meat inspection in its relation to human affairs is primarily a public health measure. But, notwithstanding this fact, the influence of a well regulated and efficiently conducted system of meat inspection extends far beyond the highly important field of hygiene. The federal meat inspection service has come to a point of development where it not only adds to the nation's enjoyment of meat in the diet, but its functioning has led to improved conditions in live stock production, through the information it furnishes concerning diseases of food animals. Live stock production occupies a unique position among the basic industries. It is something more than just an industry. It is a national asset, by reason of the fact that it is the source of supply of such a goodly portion of our daily necessities, such as food and clothing, which are essential to our very existence. From a more specific standpoint and of equally vital concern to this Association is the fact that this industry is the source in which the roots of the veterinary profession find nourishment.

### POPULATION INCREASE BRINGS NEW DEMAND

Each decade the census report reminds us of our ever-increasing population and this increasing population has a momentous significance for the live stock industry—a significance which is in fact a challenge to the ability and resourcefulness of the producers and of the veterinarians who are, by the very nature of their vocations, trustees and guardians of this great national asset. This significance to which I refer consists of a demand for an increased supply of animal products to meet the needs of this increasing population, and this in the face of the fact that the increasing population is invading the frontiers of the open range country and converting into farms under intensive cultivation vast areas that were formerly a substantial factor in maintaining an adequate live stock supply.

The mass production of live stock and the maintenance of the industry as a whole are not just matters of finance, labor, material, economics and good husbandry. These, of course, are basic

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essentials in the groundwork of the industry, but there is another factor, insidious in character, which enters into the live stock industry and imposes upon it an element of risk so great that it has to be reckoned with eternally. This insidious factor of which I speak is the potential hazard of contagious, infectious and communicable diseases and predatory parasites. These are beyond the power of the individual flock- or herd-owner to control, without organized assistance unhampered by line fences and other limitations, beyond which infection and parasites spread with impunity. This hazard increases with the intensity of live stock production.

It does not require a particularly robust imagination to picture the possibilities of depreciation and decay of the live stock industry left to chance in a conflict with such destructive forces as infection and predatory parasites. In combating these hostile enemies of our domestic animals, the meat inspection service may aptly be compared to the information or intelligence service of an army. The postmortem findings reveal not only the effects of these destructive forces, but the records serve as a directory of the identity and prevalence of these forces and the localities in which they exist, all of which affords a groundwork for evolving control measures.

#### ECONOMIC SALVAGING OF REACTORS MADE POSSIBLE

There are many factors which have contributed to the tuberculosis eradication work which is now being so successfully carried on in this country, but there is no one factor which has served more effectively than the federal meat inspection service. The information revealed by the postmortem records of this service prompted and formed the groundwork for this outstanding achievement. Further, it provided means for the economic salvaging of reactor animals. It made possible the marketing of such carcasses as were found to be fit for human food through the regular established channels of trade, without public prejudice, by reason of the confidence which has been established in that legend of acceptance:

U. S. INSPECTED AND PASSED BY THE DEPARTMENT OF AGRICULTURE
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Postmortem findings in meat inspection have done much to reveal the presence and ravages of parasites and the records



covering these findings clearly and convincingly reveal the necessity for control measures.

The maintenance of the nation's meat food supply involves more than the matter of breeding and feeding live stock. The prevention of disease and the losses incident thereto in the herds and flocks throughout the country plays a noteworthy part. In this particular field the producers of serum and accepted biological products are rendering an invaluable service. This work is materially aided by the fact that meat inspection provides a means whereby a large part of the subject animals may be salvaged for food purposes free from the reaction of public prejudice, thus keeping the cost of production within the limits of reciprocal economy.

The field of meat inspection in the United States has thus far been developed to a point where approximately seventy per cent of the nation's meat supply is certified by the U. S. Department of Agriculture, as being sound, healthful, wholesome and fit for human food under the provisions of the federal Meat Inspection Act. Of course as you all know, the scope of federal meat inspection is limited by constitutional provisions to meats and meat food products that are distributed to consumers through interstate or export channels of trade. The federal government cannot reach the numerous small local establishments whose product is distributed entirely within a state. So, if the whole field of meat inspection is to be developed, it can be done only by supplementing federal inspection with state and municipal inspection. This particular part of the field of meat inspection has not yet been fully developed. In some states and in some of the larger municipalities there has been a notable achievement along this line. What is there to be done to bring about a full development of the meat inspection field?

#### MEAT INSPECTION AN OBLIGATION OF THE VETERINARY PROFESSION

On the premise that meat inspection is clearly within the scope of veterinary science, its development is not a mere matter of choice, but a grave obligation of the veterinary profession. The veterinary profession has the advantage of adequate information for informing the public of the unquestionable necessity for a meat inspection service that will insure a healthful and wholesome meat food supply.

A public health measure, like any other public service, is established as a result of recognition by the public of the necessity for a law that will provide means for the benefit of the human race. Generally speaking, the people of the community and of the nation take it for granted that the fundamental purpose of the government is to do for the people as a whole those things which they are not able to do for themselves as individuals. Clearly the housewife who purchases the family meat supply in the public market is too far removed from the animal itself when it is slaughtered to have even the least bit of knowledge of the health status of the animal at the time of slaughter, and what is more, this housewife would be little benefited even though she were able to be present and observe the animal at time of slaughter, since a knowledge of the histology and pathology of animal diseases is not so simple a matter as to be apparent to one unlearned in the realm of autopsy, and so the consumers of meat have come to regard necessary health measures as a benevolent obligation of their government. They demand and obtain protective measures when the need for them becomes a matter of common knowledge.

#### 100,000,000 ANIMALS SLAUGHTERED ANNUALLY

Information concerning the health status of our domestic animals and the relation of their health status to the public health and welfare of mankind will come in full measure from no other source than the veterinary profession. Meat long has been and still is one of the important foods in the dietary of the American people. The per capita consumption varies slightly, the average being approximately 150 pounds a year. To meet this need at the current time requires the slaughter of something over one hundred million domestic animals annually. Out of the total supply of domestic animals slaughtered for food purposes during the fiscal year of 1930, 74,698,608 head were given federal inspection, and out of this number, 266,187 were condemned. Now in terms of percentage this figures three-tenths of 1 per cent, or in other words, 3 in 1000. In terms of profit and loss this is relatively minute, but in terms of public health, 266,187 grossly diseased animals in the nation's cupboard would result in the impairment of health not only of its unsuspecting consumers, but their posterity for several generations. Medical science acknowledges that about three-fourths of all our bodily ailments begin with bad chemical combinations in the digestive

system. Diseased meat, aside from the possibility of the transmission of the disease to the consumer, carries the by-products of disease which produce bad chemical combinations when taken into the digestive system. The Food Administration during the World War taught housewives many new things. The nation is becoming food-minded.

It is within the realm of sound logic to contemplate the time when there will be a universal inquiry about the nation's food supply from animals that are being converted into human food without the benefit of an efficient inspection. The cold fact is that the tendency of a strict inspection is to cause diseased animals to be sent to slaughter-houses having no inspection. This obviously enhances the menace from uninspected meats.

An uninspected supply of meat in the channels of trade is a potential liability in the nation's business.

Again let me repeat that on the premise that meat inspection is clearly within the scope of veterinary science, the elimination of this liability is a debt which the veterinary profession owes to society—a debt which this Association might well consider underwriting.

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### **Economic Returns from Tuberculosis Eradication**

The following editorial, published in the *Weekly Kansas City Star*, under date of October 28, 1931, bears out the contention that it pays in dollars and cents to eradicate bovine tuberculosis:

The effort made by the federal government, supplemented by state authorities, to eradicate tuberculosis, is gaining support in most sections even though a cattle war over the subject is in progress in Iowa.

Last week the first carload shipment of stocker and feeder cattle wearing yellow tags indicating that they came from an accredited county reached the Kansas City market. They sold at a premium of 25 cents a hundred over similar cattle which had no health record back of them. They were bought for shipment into an accredited county. They were moved without additional expense for testing at the terminal market or for holding them through the period necessary to complete the test.

There was a decided advantage to the consignors in the price received and the early movement to the scales. The buyer saved testing charges and was assured that the cattle bought were not only free from this disease, but had not been exposed. This is a direct evidence of the practical value of the test interpreted in cash and convenience.

Note that the editorial also emphasizes the freedom from restrictions in the terminal market enjoyed by the cattle shipped from an accredited county. This is an advantage that may be shared by both buyer and seller, and that is brought out in such transactions as the one mentioned in the editorial.

## AGGLUTININS IN EXTRACTS PREPARED FROM THE TISSUES OF GUINEA PIGS INFECTED WITH *BRUCELLA ABORTUS*\*

By W. M. THOMPSON and H. M. THOMPSON

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Jones,<sup>1</sup> working with rabbits injected with *Bacillus suispestifer*, was able to demonstrate agglutinins in extracts prepared from the dried tissues. The greatest concentration of antibody occurred in the liver, provided the animals injected with small amounts of antigen were killed within a short period. He also states:

It has been shown that this concentration of agglutinin cannot be ascribed to the blood left in the liver, since the blood serum was relatively poor in antibody. The experiments indicate that the agglutinin was produced within the liver.

Smith, Orcutt and Little<sup>2</sup> have shown that milk drawn from a quarter of the udder infected with *Brucella abortus* contains agglutinin in higher concentration than milk from uninfected quarters. As a result of a series of experiments in which various quarters were inoculated with living or dead cultures of the organism, they concluded that there is a distinct participation of the udder in the production of agglutinin.

Gilman,<sup>3</sup> in his studies on the agglutination titre of milk from cows infected with *Br. abortus*, stated that the agglutinins present in milk appear to represent a distinct local reaction. Each quarter of the udder acts as a unit, in the production of agglutinins, as evidenced by the fact that only one or more quarters may show agglutinins. Many animals with a high blood titre show no agglutinins in the milk, which indicates that they apparently do not originate in the blood stream. Mitchell and Duthie<sup>4</sup> reported a reduction in the blood agglutination titre after the removal of the udder in two cows known to be infected with *Br. abortus*.

Jungeblut and Berlot<sup>5</sup> state:

Various statements in the literature seem to indicate that by blocking the reticulo-endothelial system of experimental animals, the appearance of various antibodies, precipitins, agglutinins and hemolysins were frequently prevented or delayed, which observations were still more distinct if the spleen was removed simultaneously shortly before immunization.

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J. Bailey,<sup>6</sup> writing on the functional rôle of agglutinins, states:

It is held that the process plays no essential part in the protection of animals and that it is closely associated with phagocytosis. The exact site of formation of agglutinins has not been definitely established, but it does seem that several organs of the body are capable of causing their production.

The purpose of these experiments was to determine if possible:

(1) Whether the presence of agglutinins for *Br. abortus* could be detected in extracts prepared from various tissues of infected guinea pigs and (2) whether the cells of one organ produce agglutinins independently of those of another.

#### EXPERIMENT I

The first experiment includes twenty guinea pigs, eighteen of which had received an intraperitoneal injection of 5 cc of milk suspected of being infected with *Br. abortus*. Two pigs (10 and 19), selected from the stock pen, were used as controls. They were autopsied six weeks following the date of injection. Sixteen proved to be infected and four free from infection as indicated by the agglutination titre of the blood serum in each case.

In preparing the extracts a piece of the liver about equal to the kidney in bulk, half of the spleen (the other half was used for culture) and the entire lymph-gland, testicle, adrenal and kidney were used. The tissues were placed in a sterile porcelain mortar directly after their removal at autopsy. They were reduced to a thick pulp, 4 cc of physiological saline solution added and the contents of the mortar well stirred. The mixture was then transferred to a centrifuge-tube and placed in the ice-box overnight. The following morning these tubes were centrifuged and 1 cc of the supernatant fluid was removed and used for the agglutination test.

The method used in setting up tests was that described by Gilman<sup>7</sup> except that the primary dilution was omitted. The 1 cc of tissue extract was added directly to the first tube, as it was assumed that the extract would correspond more nearly to a 1:5 dilution of serum. Twelve tubes were used in order to determine the limiting titre. The final dilution of the first tube was 1:20 and that of the second tube 1:40. In each case the dilution in the tube was twice that of the preceding tube. The dilution in the last tube was 1:40,560.

It was found that the first two tubes were somewhat clouded with tissue cells but the higher dilutions were clear, and there



TABLE I—Results of agglutination tests in experiment I.

GUINEA PIG	1	2	3	4	5	6	7	8	11	12	13	14	15	16	17	18	9	CONTROLS		
																		10	19	20
Liver	2560	1280	—	1280	—	—	—	5120	10240	640	5120	2560	640	2560	10240	2560	—	—	—	—
Spleen	640	320	—	320	1280	640	320	1280	10240	—	2560	2560	—	—	5120	640	—	—	—	—
Lymph-gland	160	80	160	—	—	80	320	320	—	160	320	160	80	—	160	—	—	—	—	—
Testicle	—	320	—	—	640	—	—	640	640	640	640	—	640	320	—	640	—	—	—	—
Kidney	1280	1280	640	640	320	1280	320	5120	5120	1280	1280	2560	1280	1280	10240	2560	—	—	—	—
Adrenal	—	—	—	—	—	—	—	—	—	5120	10240	10240	5120	5120	40560	10240	—	—	—	—
Serum	40560	10240	2560	5120	10240	20480	5120	40560	20480	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	—	—	—	—
Culture Spleen	—	—	Neg.	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	—	—	—	—

— = negative test.

The numbers indicate the highest dilution in which complete agglutination occurred.

Blank space indicates test was not made.

TABLE II.—Results of agglutination and complement-fixation tests in experiment II.

GUINEA PIG	1			2			3			4			5			6 (CONTROL)		
	Agg.	C.F.	L	Agg.	C.F.	L	Agg.	C.F.	L	Agg.	C.F.	L	Agg.	C.F.	L	Agg.	C.F.	L
Liver	320	4444	—	2560	4444	—	640*	4444	—	80*	cccc	—	160*	43ccc	x	—	cccc	—
Spleen	—	31ccc	x	—	cccc	x	—	cccc	x	—	cccc	—	20*	cccc	x	—	cccc	—
Lymph-gland	—	3cccc	x	—	cccc	x	—	cccc	x	—	cccc	—	—	cccc	x	—	cccc	—
Kidney	80	4443c	—	320	4444	—	40*	4443	—	20*	cccc	—	—	cccc	—	—	cccc	—
Adrenal	—	cccc	—	—	cccc	—	—	cccc	—	—	cccc	—	—	cccc	—	—	cccc	—
Intestines	—	—	—	40*	4444	—	320	cc	—	—	—	—	—	cccc	—	—	cccc	—
Lung	160	44442	—	—	42cc	—	160*	4443	—	—	—	—	40*	4cccc	—	—	cccc	—
Serum	2560	4444	—	12040	4444	—	5120	4444	—	10240	4444	—	20480	4444	—	—	cccc	—
Testicle	—	—	—	—	—	—	—	—	—	—	cccc	x	—	cccc	—	—	cccc	—

Agg. = agglutination test.

\* = partial agglutination in next higher dilution.

— = negative test.

C. F. = complement-fixation test.

c = complete clearing.

4 = no clearing.

3, 2 and 1 = partial clearing.

L. = lesions.

x = presence of macroscopic lesions.

— = no lesions observed.

Note: Guinea pigs 1, 2 and 3 were females.

TABLE III—Results of agglutination tests in experiment III.

GUINEA PIG	1		2		3		4		5		6		7		8		9		10	
	Agg.	L	Agg.	L	Agg.	L	Agg.	L	Agg.	L	Agg.	L	Agg.	L	Agg.	L	Agg.	L	Agg.	L
Liver	—	—	100	—	200	x	500	x	200	—	500	—	100	—	200	—	—	—	—	—
Spleen	—	—	—	x	100	x	500	x	25	x	200	x	50	—	100	x	—	—	—	—
Lymph-gland	—	—	—	x	50*	x	100	x	—	x	200	x	—	x	—	—	—	—	—	—
Testicle	—	—	—	—	500	x	500	x	100	—	500	—	200	—	50	—	—	—	—	—
Kidney	—	—	100	—	500	—	500	—	500	—	—	—	200	—	100	—	—	—	—	—
Adrenal	—	—	—	—	25	—	100	—	—	—	—	—	—	—	—	—	—	—	—	—
Intestines	—	—	—	—	100	—	100	—	—	—	—	—	100	—	200	—	—	—	—	—
Lung	—	—	50	—	200	—	500	—	100	—	500	—	100	—	200	—	—	—	—	—
Serum	—	—	500	—	500	—	500	—	500	—	500	—	500	—	500	—	—	—	—	—

Agg. = agglutination test.

— = negative test.

Number = highest dilution in which complete agglutination occurred.

\* = partial agglutination in next higher dilution.

L = lesions.

x = presence of macroscopic lesions.

— = no lesions observed.

Blank space indicates test was not made.

was but slight difficulty experienced in reading the results. The results are recorded in table I.

#### EXPERIMENT II

In this experiment six guinea pigs were used. Pigs 1 and 2 received subcutaneously 1 cc each, of a suspension of *Br. abortus* (strain 80) prepared from a 24-hour agar-slant culture. Pigs 3, 4 and 5 received 0.5 cc of a like suspension intraperitoneally. One control (6) taken from the stock pen, was used. Pigs 1 and 2 were autopsied at the end of five weeks, and pigs 3, 4 and 5 were autopsied between the fifth and sixth weeks after receiving the injection.

The tissues were removed and the extracts prepared in the same manner as in experiment I, except that in this case 10 cc of physiological saline solution was used instead of 4 cc. After the extracts were centrifuged they were passed through a Seitz bacterial filter to remove any tissue cells that might remain.

In this experiment the entire spleen, both adrenal glands, and both sublumbar lymph-glands were used in preparing the extracts. Complement-fixation and agglutination tests were made with each extract and are recorded in table II.

#### EXPERIMENT III

In this experiment 8 guinea pigs were used. Pigs 1 and 22 received an intraperitoneal injection of 5 cc of milk suspected of containing *Br. abortus*, as in the first experiment. Pig 1 apparently was not infected. Pigs 3, 4, 5 and 6 received 0.5 cc each of a suspension of *Br. abortus*, intraperitoneally, as in the second experiment. Pigs 7 and 8 received 0.5 cc of the same suspension subcutaneously. Two controls (9 and 10) were selected from the stock pen. The extracts were prepared as in experiment II except that 2 cc instead of 10 cc of physiological saline solution was used. The extracts were not filtered after centrifuging. The supernatant fluid was removed with a pipette and used in place of serum in performing the agglutination test. In this experiment, the rapid test, as described by Huddleson,<sup>8</sup> was used. The results are recorded in table III.

#### DISCUSSION

As the organs contain varying proportions of liquids and there is no way of determining the proportion of reticulo-endothelial cells to other cells, no attempt was made to standardize the extracts. Therefore, we think the titre of one tissue is not com-

parable to that of another in the same animal. Since the same procedure was followed in each animal, comparisons between the titres found in corresponding organs of different guinea pigs would be more accurate. Our conclusions are based, not on the titres recorded, but on the presence or absence of the agglutinin reaction.

The larger quantity (10 cc) of physiological saline solution was used in experiment II to insure sufficient extract for both the complement-fixation test and the agglutination test. It was thought desirable to check the agglutination test with the complement-fixation test as we wished to be sure that antibodies were present, and that the agglutination observed in the first experiment was not due to some non-specific cause. Forty-eight extracts were tested by both methods and there was agreement in 45 cases with conflicting results in three. In view of the fact that such a large amount of physiological saline solution was used in preparing the extracts, we have regarded slight reactions to both the complement-fixation test and the agglutination test as positive. It is possible that some of the negative reactions to both tests would have been positive had the extracts been more concentrated.

As the lymph-glands and adrenals of the guinea pig are very small, we thought it desirable to check the results of the first experiment with those of the third. We obtained both negative and positive results in the third experiment, as in the first, with extracts prepared from lymph-glands. In the first experiment all of the adrenals were negative, while in the third experiment we had two positive reactions.

#### CONCLUSIONS

1. Agglutinins were demonstrated in one or more organs of guinea pigs infected with *Brucella abortus*, while other organs of the same animal, examined by like or comparable methods, failed to reveal their presence.

2. Agglutinin production appears to be a local process in its relation to various organs of the body.

#### ACKNOWLEDGMENT

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#### REFERENCES

- Jones, F. S.: The liver as a source of bacterial agglutinins. Jour. Exp. Med., xli (1925), pp. 767-778.



- <sup>2</sup>Smith, T., Orcutt, M. L., and Little, R. B.: The source of agglutinins in the milk of cows. *Jour. Exp. Med.*, xxxviii (1923), p. 153.
- <sup>3</sup>Gilman, H. L.: The elimination of *Bact. abortus* in the milk of cows. *Corn. Vet.*, xx (1930), 2, pp. 106-120.
- <sup>4</sup>Mitchell, C. A., and Duthie, R. C.: The udder as a reservoir of *Brucella melitensis (abortus)* infection of cattle. *Can. Jour. Res.*, ii (1930), p. 403.
- <sup>5</sup>Jungeblut, C. W., and Berlot, J. A.: The role of the reticulo-endothelial system in immunity. *Jour. Exp. Med.*, xliii (1926), p. 613.
- <sup>6</sup>Bailey, J. H.: The newer knowledge of bacteriology and immunology. Jordan and Falk (Chicago, Chicago Press, University of Chicago, 1928).
- <sup>7</sup>Gilman, H. L.: Technique of the agglutination test for Bang abortion disease. *Ann. Rpt. N. Y. State Vet. Coll.* 1927-1928.
- <sup>8</sup>Huddleson, I. F., and Carlson, E. R.: A rapid method for performing the agglutination test in the serum diagnosis of Bang's abortion disease in cattle. *Jour. A. V. M. A.*, lxx (1926), n. s. 23 (2), pp. 229-233.

### Kansas City Convention Notes

The Veterinary Corps of the Army was unusually well represented. Probably the meeting of military officers Thursday morning was the attraction. Among those present were: Colonels John A. McKinnon, Robert J. Foster and R. J. Standlift (retired); Lieutenant-Colonel A. L. Mason; Majors R. A. Kelser, Chas. B. Dunphy, C. E. Cook, Harry E. Van Tuyl, James A. McCallam and Harry J. Juzek; Captains George L. Caldwell and James E. Noonan; and Lieutenant Stanley M. Nevin.

Ohio had twenty-three entries on the gentlemen's registry. The Buckeyes included Drs. W. A. Axby, Harrison; O. V. Brumley, L. W. Goss, J. D. Grossman, W. F. Guard, F. A. Lambert and W. H. McKenzie, Columbus; John W. Burke and Lester C. Neer, Dayton; F. L. Carr, Alliance; C. H. Case, Akron; G. H. Chandler, Upper Sandusky; C. A. Clark, College Corner; J. V. Crago, Warren; S. R. Craver, Youngstown; E. A. Downs, Mount Sterling; O. B. Hess, Fostoria; H. A. Hoopes, La Rue; George W. Lies, Fort Recovery; L. C. Lynch, Middletown; E. L. Roshon, Sabina; G. V. Spayth, Bloomville; and E. J. Starbuck, Fort William.

Indiana fell one short of Ohio in the number of veterinarians at the meeting. There were twenty-two Hoosiers against twenty-three Buckeyes. The Hoosiers were: Drs. G. M. Blubaugh, Lebanon; F. H. Brown, H. Danner, R. C. Julien, L. C. Schoenlaub, D. M. Smith and B. H. Yenner, Indianapolis; J. F. Bullard, Lafayette; James C. Conway, New Goshen; G. M. Dorman, G. W. Gillie and Paul C. Kucher, Fort Wayne; N. C. Elbersson, Anderson; D. W. Gerber, Clay City; John J. Glover, Zionsville; C. H. Goddard, Pine Village; W. C. Kortenber, New Haven; O. W. Noyes, Evansville; E. R. Page, Corydon; T. A. Sigler, Greencastle; C. Harvey Smith, Crown Point; and G. M. Wagaman, Kokomo.

## SEROLOGICAL STUDY OF A POLYVALENT ANTIGEN OF *ALCALIGENES ABORTUS* (BANG)\*

By L. E. STARR, *Blacksburg, Virginia*

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Polytechnic Institute*

### INTRODUCTION

There is considerable variation in the methods used by the different laboratories in conducting routine agglutination tests for Bang's disease. This is true from the standpoint of sodium chlorid concentration, manner in which the antigen is prepared, and stored, as well as the temperature at which the final agglutination test is incubated.

This study was made to show whether there was any advantage or disadvantage in using a heated or unheated antigen, and to determine the concentration of sodium chlorid that gave the most satisfactory results. The following factors are included in this paper:

1. Varying concentrations of sodium chlorid in the antigen.
2. Comparison of antigens not heated and stored at refrigerator temperature; not heated and stored at room temperature; heated one hour at 55° C.; and boiled for one minute over a flame.
3. Comparison of results when agglutination tests were incubated at 37° C. and at 55° C.

### METHOD EMPLOYED

Strains of *Alcaligenes abortus* (Bang) that were used were: strain 80, which was originally obtained from Dr. C. M. Carpenter, at Cornell University, Ithaca, N. Y.; a bovine strain recently isolated from the Agricultural Experiment Station herd, and one that was secured from the laboratory of the Virginia State Department of Agriculture, B. A. I., Richmond, Va.

The organisms were grown on liver-infusion agar pH 6.8, and washed off with normal sodium chlorid solution after incubation for 72 hours at 37° C. The suspension obtained was centrifuged for three hours at 1800 r.p.m., at which time all the organisms were thrown to the bottom of the centrifuge-tubes. They were then re-suspended in four main groups.

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Each main group of antigen was divided into six lots. Five per cent phenol was used as preservative and the antigens were standardized for density with tube 1 of McFarland's nephelometer. All the lots of the four main groups were made with the same variations in sodium chlorid concentration, *i. e.*, 0.85, 4, 8, 12, 16 and 20 per cent. One of the main groups was unheated and stored at refrigerator temperature, one was unheated and stored at room temperature, one heated for one hour at 55° C. and stored at refrigerator temperature, and one was boiled for one minute and stored at refrigerator temperature during the duration of the study.

Serum for making the agglutination tests was obtained from a cow that had shown a uniform titre over a period of more than a year. Fresh serum was used at each test. Tests were made,

TABLE I—Antigen heated one hour at 55° C.

August						
NaCl (%)	1:50	1:100	1:200	1:400	1:800	1:1600
.085	+	+	+	+	+	+
.04	+	+	+	+	+	+
.08	+	+	+	+	+	+
.12	+	+	+	+	+	+
.16	+	+	+	+	+	+
.20	+	+	+	+	+	—
September						
.085	+	+	+	+	+	+
.04	+	+	+	+	+	—
.08	+	+	+	+	+	+
.12	+	+	+	+	+	—
.16	+	+	+	+	—	—
.20	+	+	+	+	—	—
October						
.085	+	+	+	+	+	+
.04	+	+	+	+	+	—
.08	+	+	+	+	—	+
.12	+	+	+	+	+	—
.16	+	+	+	—	—	—
.20	+	+	—	—	—	—

+ = complete agglutination, supernatant fluid clear.

++ = almost complete agglutination, supernatant fluid slightly turbid.

+++ = slight agglutination, supernatant fluid turbid.

++++ = very slight agglutination, supernatant fluid turbid.

using the same serum and antigen, at 30-day intervals. The agglutination tests were made in dilutions of 1:50, 1:100, 1:200, 1:400, 1:800 and 1:1600.

The final tests were set up in duplicate, one was incubated at 37° C., and the other at 55° C. They were allowed to incubate over night, were then removed in the morning, allowed to stand at room temperature during the day, and read in the evening. The results are shown in tables I, II, III and IV. Individual tables showing the results of incubation at 37° C. and 55° C. are not included, since they are practically duplicates of each other.

#### SUMMARY

1. Antigen with 4, 8 and 12 per cent sodium chlorid concentration gave the clearest agglutination reaction, 8 per cent being the most consistent. Normal sodium chlorid showed more incomplete reactions and some proagglutination. Antigens with 16 and 20 per cent sodium chlorid concentrations were not satisfactory, the agglutinations being incomplete in most instances, both at low and high dilutions. The end titre was lower and

TABLE II—Antigen boiled one minute

August						
NaCl (%)	1:50	1:100	1:200	1:400	1:800	1:1600
.085	+	+	+	+	+	—
.04	+	+	+	+	+	—
.08	+	+	+	+	+	+
.12	+	+	+	+	+	—
.16	+	+	+	+	+	—
.20	+	+	+	+	—	—
September						
.085	+	+	+	+	+	—
.04	+	+	+	+	+	—
.08	+	+	+	+	+	+
.12	+	+	+	+	—	—
.16	+	+	+	+	—	—
.20	+	+	—	—	—	—
October						
.085	+	+	+	+	+	—
.04	+	+	+	+	+	—
.08	+	+	+	+	+	+
.12	+	+	+	+	—	—
.16	+	+	+	+	—	—
.20	+	—	—	—	—	—

proagglutination occurred in 12, 16 and 20 per cent concentrations.

2. Unheated antigen stored at refrigerator temperature for two months showed no appreciable depreciation. Most of the variations noted may be attributed to minor errors in making the dilutions.

3. Unheated antigen stored at room temperature was not so satisfactory as refrigerated antigen. The titre tended to become lower and there were more partial or incomplete agglutinations.

4. Antigen heated at 55° C. for one hour did not show so uniformly high a titre as the unheated lot, and there were more incomplete reactions.

5. Approximately the same results were found with antigen boiled for one minute over a flame as with that heated for one hour at 55° C.

6. Incubation of the tests was satisfactory at temperatures of either 37° C. or 55° C. Incubation at 55° C. causes flocculation a little more quickly than at 37° C. It appears to be better for

TABLE III—Unheated antigen (refrigerated)

August						
NaCl (%)	1:50	1:100	1:200	1:400	1:800	1:1600
.085	+	+	+	+	+	<sup>3</sup> +
.04	+	+	+	+	+	<sup>3</sup> +
.08	+	+	+	+	+	<sup>3</sup> +
.12	+	+	+	+	+	<sup>3</sup> +
.16	+	+	+	+	<sup>3</sup> +	—
.20	+	+	+	+	<sup>3</sup> +	—
September						
.085	<sup>3</sup> +	+	+	+	<sup>1</sup> +	—
.04	+	+	+	+	+	<sup>3</sup> +
.08	+	+	+	+	+	<sup>3</sup> +
.12	+	+	+	+	+	<sup>3</sup> +
.16	<sup>3</sup> +	+	+	+	—	—
.20	<sup>3</sup> +	+	+	—	—	—
October						
.085	<sup>2</sup> +	+	+	+	<sup>1</sup> +	—
.04	+	+	+	+	+	<sup>1</sup> +
.08	+	+	+	+	+	<sup>1</sup> +
.12	+	+	+	+	+	—
.16	<sup>3</sup> +	+	+	—	—	—
.20	<sup>3</sup> +	<sup>3</sup> +	—	—	—	—



TABLE IV—Unheated antigen (stored at room temperature)

August						
NaCl (%)	1:50	1:100	1:200	1:400	1:800	1:1600
.085	+	+	+	+	+	+
.04	+	+	+	+	+	+
.08	+	+	+	+	+	+
.12	+	+	+	+	+	+
.16	+	+	+	+	+	—
.20	+	+	+	+	+	—
September						
.085	+	+	+	+	+	—
.04	+	+	+	+	+	—
.08	+	+	+	+	+	+
.12	+	+	+	+	+	—
.16	+	+	+	+	—	—
.20	+	+	—	—	—	—
October						
.085	+	+	+	+	—	—
.04	+	+	+	+	+	—
.08	+	+	+	+	+	+
.12	+	+	+	+	—	—
.16	+	+	+	—	—	—
.20	+	+	+	—	—	—

old blood samples, as growth from contamination is inhibited to some extent.

#### CONCLUSIONS

1. Antigen with 8 per cent sodium chlorid concentration gave the most satisfactory agglutination reactions.
2. Unheated antigen stored at refrigerator temperature was more satisfactory than identical antigens stored at room temperature or antigens that had been heated.
3. Incubation at 37° C. and 55° C. were equally satisfactory except that the reactions occur a little earlier in the latter case.

There appears to be a difference of opinion among Ohio veterinarians as to whether the disease reported as swine erysipelas in that state really is that infection or just a form of old-fashioned hog cholera.

# BOVINE MASTITIS CAUSED BY *PSEUDOMONAS AERUGINOSA*\*

By V. A. CHERRINGTON and E. M. GILDOW

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## INTRODUCTION

Mastitis is generally recognized as one of the most important diseases of the udder. The annual loss to the dairy industry owing to udder infections is enormous. This loss is represented not only by decreased production during the course of the infection but also by permanent failure of infected udders to return to normal production after the disease has abated.

Although streptococcal infection is generally recognized as the most common cause of mastitis, many other organisms have been incriminated. Occasionally, an organism which is not commonly associated with mastitis is found to be the infectious agent. This paper constitutes a study of an acute form of infectious mastitis in a dairy herd where the causative organism was found to be *Pseudomonas aeruginosa*.

## HISTORICAL

*Pseudomonas aeruginosa* was isolated and first described as *Bacterium aeruginosum* by Schroeter, in 1872. Generally, however, the organism is known as *Bacillus pyocyaneus*, which was so named by Gessard, in 1882. This organism has frequently been termed the bacillus of green or blue-green pus in man and animals. For some time *Ps. aeruginosa* was regarded as a rather harmless saprophyte, but later researches show that frequently it is the cause of numerous infections. No attempt will be made in this paper to make a general review of the literature dealing with *Ps. aeruginosa*. Only such references as are pertinent to the subject will be mentioned.

Löhnis and Fred<sup>1</sup> refer to *B. pyocyaneum* as "a species connected with pus formation in wounds and sometimes in the udder." Carpenter,<sup>2</sup> in his attempt to produce experimental bovine mastitis, found that "*Bacterium pyocyaneum* produced only a slight inflammation of the udder when injected into the teat canals. The mastitis cleared up in 48 to 72 hours after injections."

Pickens, Welsh and Poelma<sup>3</sup> concluded that "under proper conditions *Ps. aeruginosa* seemed to be capable of producing

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mastitis in dairy cattle. The blood of animals suffering, or having recently suffered, from infection with *Ps. aeruginosa* may agglutinate homologous antigens in dilutions as high as 1:1000. The blood of cattle not suffering or not having recently suffered from infection with *Ps. aeruginosa* may agglutinate homologous antigens in dilutions as high as 1:50."

#### EXPERIMENTAL

Recently a sample of milk was received at the laboratory for examination. The milk had a yellow tinge and a lumpy consistency. After standing a few hours, the milk separated into a mass of spongy solids and yellow serum. The sample had been taken from a cow affected with acute mastitis. On culturing, a pure culture of an organism resembling *Ps. aeruginosa* was isolated. When the organism was studied in detail our findings indicated that the cultural and biochemical properties conformed to Bergey's<sup>4</sup> description of *Ps. aeruginosa*. The organism was a small Gram-negative rod, 0.5 by 1.5 microns, occurring singly or in pairs. It was motile by means of a polar flagellum. On both agar and gelatin the growth was abundant, and after 24 hours a green pigment became diffused throughout the media. Gelatin stab cultures were rapidly liquefied. A marked turbidity with a thick pellicle and heavy sediment was noted in broth. In litmus milk a soft coagulum was formed, but was rapidly peptonized and the litmus was reduced. On potato there was a luxuriant, dirty brown growth, the medium gradually becoming dark green. Indol was not formed. Nitrates were reduced to nitrites, in a few hours. Blood serum was liquefied and blood was hemolyzed. The organism was a facultative aerobe and grew best at 37° C.

Since mastitis caused by *Ps. aeruginosa* is somewhat rare, it was decided to make further studies on the herd. A large percentage of the herd had suffered from periodic attacks of mastitis. Each heifer developed mastitis soon after calving. The use of commercial mastitis vaccines and the application of routine preventive measures had not yielded results.

Mastitis caused by *Ps. aeruginosa* in this herd was characterized by a sudden onset, occurring usually a few days following calving in both cows and heifers. It caused severe inflammation and swelling in the affected quarters but usually was of short duration. Many cases were apparently completely recovered by the end of the 48th hour. Recurrences of mastitis in the same

quarter during the lactation period were common. Occasionally a case became chronic and the quarter was rendered useless for milk production.

Samples of milk were obtained aseptically from all lactating cows and blood samples were taken from the entire herd in order to obtain information concerning the presence of the causative organism in relation to agglutination reactions. The agglutination tests were conducted on both the blood and milk samples. In addition, five milk samples were taken at irregular intervals from cows that developed mastitis during the course of this study. These samples were plated according to the "Standard Methods of Milk Analysis." Plates made from four of the five samples, after incubating for 48 hours at 37° C., developed many colonies producing a soluble green pigment. The organisms in these colonies proved to be *Ps. aeruginosa*. There was no indication that other organisms were associated with *Ps. aeruginosa* in causing mastitis in these cows.

Antigen for the agglutination test was prepared by washing the bacterial growth from the surface of 18-hour nutrient agar slant cultures with sterile 0.85 per cent physiological salt solution containing 0.5 per cent phenol. The antigen was then filtered through glass wool in order to remove any particles of agar that might have been removed with the organisms. This suspension of organisms was then diluted with sterile 0.85 per cent physiological salt solution until it compared in density with tube 1 of the McFarland nephelometer. The antigen was stored in the ice-box at 15° C. until used.

Table I gives data on all cows in the herd showing the agglutination reactions on both blood and milk sera, and designating those animals affected with mastitis that were found to be infected with *Ps. aeruginosa*.

The blood sera were tested in dilutions of 1:25, 1:50, 1:100, 1:200, 1:400, 1:800 and 1:1600, and with proper controls were incubated for 48 hours at 37° C. Sera from three of the animals agglutinated the antigen in dilutions as high as 1:1600. The high-titre cows were the animals that had had the most recent and severe infection with *Ps. aeruginosa*.

Milk sera from the eight lactating cows in the herd were tested in the same manner as the blood sera, and with proper controls were incubated for 48 hours at 37° C. These readings are also recorded in table I. Agglutination occurred in dilutions as high as 1:200 in some of the tests, while milk serum from normal cows

TABLE I—Agglutination titres on blood and milk sera of cows from a herd infected with *Pseudomonas aeruginosa*.

ANIMAL	BLOOD SERUM REACTIONS							MILK SERUM REACTIONS				
	1:25	1:50	1:100	1:200	1:400	1:800	1:1600	1:25	1:50	1:100	1:200	1:400
*1	+	+	+	+	+	+	0	+	+	+	0	0
2	+	+	+	0	0	0	0	+	0	0	0	0
*3	+	+	+	+	+	+	0	+	+	+	0	0
4	+	+	+	0	0	0	0	+	+	0	0	0
5	+	+	+	0	0	0	0	+	0	0	0	0
*6	+	+	+	+	+	+	+	+	+	+	+	0
7	+	+	+	+	+	+	+		Cow was dry			
8	+	0	0	0	0	0	0	+	0	0	0	0
9	+	+	+	0	0	0	0		Cow was dry			
*10	+	+	+	+	+	+	0	+	+	+	+	0
11	+	+	+	+	+	+	+		Cow was dry			

+ Complete agglutination.

= 75% agglutination.

= 50% agglutination.

= 25% agglutination.

= No agglutination.

0 = Cows found harboring *Pseudomonas aeruginosa*.



would not agglutinate the antigen in dilutions over 1:25. The high-titre cows were again the animals that had had the most recent and severe infection with *Ps. aeruginosa*.

#### DISCUSSION

There were eleven cows in the herd at the time of this study and seven of them developed a severe form of mastitis. *Ps. aeruginosa* was isolated from the milk of cows 1, 3, 6 and 10, and *Escherichia coli* was isolated from the milk of cow 2. Cultures were not made from the milk of cows 7 and 11, because they were dry at the time of the herd test. Herd records, however, show that these cows had been affected with mastitis during their last lactation period. The infections in these animals were probably caused by *Ps. aeruginosa* since they both show blood serum agglutination titres of 1:1600. Cows 4, 5, 8 and 9 were not known to have suffered recently from mastitis.

A study of table I shows that blood serum from an animal infected with *Ps. aeruginosa* agglutinates the antigen at higher dilutions than milk serum from the same animal. There is a direct relationship, however, between the titre of the blood serum and milk serum of the same animal. This is shown by the high titres of both the blood and milk sera of cows 1, 3, 6 and 10. Even though the agglutination reaction of the milk serum was not evident in high dilutions, it was distinct and easy to read.

The dairy equipment on this farm was kept scrupulously clean and sanitation was practiced in caring for the cows. From the information at hand the probable source of the infection was not apparent. However, a clue was found when it was learned that the water supply, though coming from a deep well, was first used in the milk-house to wash the dairy utensils before flowing to the watering-trough. Since the milk carried this organism and contaminated the water it supplied a constant source of infection to the cows. Since the water supply has been corrected two heifers have freshened without showing any evidence of the infection. Only one cow (6) has continued to show periodic attacks of mastitis. No new cases have developed.

#### SUMMARY

1. *Ps. aeruginosa* was found to be the predominant cause of a persistent outbreak of mastitis in a dairy herd.

2. Mastitis caused by *Ps. aeruginosa* may be diagnosed by (1) isolation of the organism from the milk; (2) demonstration of

an agglutination titre of 1:100, or over, of the blood serum; or (3) demonstration of an agglutination titre of 1:50, or over, of the milk serum.

3. A definite relationship exists between the agglutination titres of the blood and milk sera in animals affected with mastitis caused by *Ps. aeruginosa*.

4. Contamination of the water supply with *Ps. aeruginosa* was responsible for recurrent cases of mastitis in the outbreak studied.

5. The correction of the water supply prevented further development of mastitis caused by *Ps. aeruginosa*.

#### REFERENCES

<sup>1</sup>Löhnis, F. and Fred, E. B.: Textbook of Agricultural Bacteriology (McGraw-Hill Book Co., New York, 1923).

<sup>2</sup>Carpenter, C. M.: Experimental production of bovine mastitis with streptococci and other bacteria. Jour. Inf. Dis., xxxi (1922), pp. 1-9.

<sup>3</sup>Pickens, E. M., Welsh, M. F., and Poelma, L. J.: Pyocyaneus bacillosis and mastitis due to *Ps. aeruginosa*. Corn. Vet., xvi (1926), pp. 186-202.

<sup>4</sup>Bergey, D. H.: Manual of Determinative Bacteriology (Williams and Wilkins, Baltimore, 1930).

### Impostor Sent to Jail

For representing himself to Iowa farmers as a federal official, J. J. Flanagan, a salesman of poultry remedies, recently was sentenced to six months in jail. He aroused the suspicions of local authorities by selling so-called poultry remedies while at the same time claiming to be a federal employe engaged in the inspection of poultry for tuberculosos.

Acting on information telegraphed by County Agricultural Agent F. G. Lundblad, with headquarters at Fort Dodge, Iowa, the U. S. Department of Agriculture, through its inspector in charge, Dr. J. A. Barger, at Des Moines, conducted an investigation. It was learned that the man had previously operated in the vicinity of Emmetsburg, Palo Alto County, Iowa. When arrested by local authorities and tried in the Hamilton County district court, he pleaded guilty to the charge and was sentenced to imprisonment for six months.

### Where Is Your Cat?

According to Mr. J. M. Loughborough, secretary of the International Cat Society, there are 120,000,000 cats in the United States, or approximately one cat for each man, woman and child. New York alone has about 7,000,000 of these felines, says Mr. Loughborough, who estimates that sixty-five per cent of the cat population is made up of "strays." Where is yours? At home or on a neighbor's back fence?

## CORYNEBACTERIUM EQUI IN PNEUMONIA IN FOALS\*

By W. W. DIMOCK and P. R. EDWARDS

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Primary pneumonia of foals is a rather unusual condition. Most pneumonias of very young horses are a complication of joint-ill or navel-ill, and the organisms commonly found in these conditions can be isolated from the lung tissue. Streptococci and *Bact. viscosum equi* are the microorganisms most frequently found in cases of pneumonia which occur as a complication of navel-ill and joint-ill. The affected animal usually shows evidence of infection from birth or shortly thereafter.

Magnusson<sup>1</sup> described twelve cases of purulent pneumonia of foals two to three months old, in which the illness apparently had no relation to joint-ill. These cases were confined to one breeding establishment in southern Sweden. Ten occurred in one year. From all these colts he isolated a bacterium to which he gave the name *Corynebacterium equi*. Miessner and Wetzel<sup>2</sup> isolated a similar organism from a foal in Germany. They called the organism *Corynebacterium pyogenes (equi)*. Lütje<sup>3</sup> isolated the organism from three cases of purulent pneumonia in foals. He referred to the organism as *Corynebacterium (pyogenes) equi roseum*. Lund<sup>4</sup> reported a case of the disease in a six-month-old foal. He applied the name *Corynebacterium pyogenes* to the organism. As far as we are aware, reports of the presence of this infection have been confined to Sweden and Germany.

The purpose of the present communication is to report the presence of this infection in Kentucky and the isolation of *Corynebact. equi* from four foals. The first case of this disease encountered was in a 42-day-old foal brought to the laboratory for postmortem examination on May 2, 1927. Since that time three other foals have been found to be suffering with this infection.

### SYMPTOMS

The disease usually occurs in foals two to four months of age. There is no apparent connection between this disease and the

\*The investigation reported in this paper is in connection with a project of the Kentucky Agricultural Experiment Station and is published by the permission of the Director. Received for publication, June 29, 1931.

joint-ills of very young foals. In the majority of the cases reported, the affected individuals have suffered no previous illness. The onset of the disease is characterized by dullness, increased temperature, rapid pulse and respiration. The temperature remains above normal during the course of the disease, sometimes exceeding 106° F. The foal soon begins to cough and the eyes become watery. There is a purulent discharge from the nasal passages. Moist râles develop in the lungs. The foal becomes weak and emaciated and death follows. The course of the disease has been found to vary from six to fourteen days. Our experience with the infection is too limited to make any estimate of the incidence or the mortality. Magnusson<sup>1</sup> reports a fatality of 80 per cent.

#### GROSS PATHOLOGY

In the majority of cases the disease is apparently of respiratory origin. The most constant lesions are a broncho-pneumonia with multiple abscess formation. The abscesses are circumscribed and vary in size from 10 to 100 mm. in diameter. The abscesses are scattered throughout the entire lung but are most numerous in the ventral portion. The abscesses are filled with a purulent exudate, yellowish gray in color. While the content of the smaller abscesses is usually fluid, in the larger abscesses it is more likely to be inspissated. The lymph-glands of the pulmonary region almost always are involved. The mediastinal glands are greatly enlarged and are abscessed. In many cases the mesenteric, colic and hepatic lymph-glands are much enlarged and contain abscesses. In some cases multiple abscesses of the liver have been observed. The abscesses in the lungs appear to be the oldest lesions. The infection apparently becomes established in the lung tissue and spreads throughout the body through the lymphatics and a septicemia eventually develops.

#### MORPHOLOGICAL AND CULTURAL CHARACTERS

In exudate from the abscesses and smears from agar-slant cultures, *Corynebact. equi* appears as a short rod with rounded ends measuring 1.2 to 1.5 microns x 1.2 microns. Many coccoid forms are seen. In broth cultures the morphology is quite different, the culture being made up of long rods and filaments. Numerous instances of branching have been observed in broth cultures but not in smears from agar slants. The organism is non-motile and does not produce spores. No capsules have been observed. It is strongly Gram-positive.

The organism grows well on ordinary nutrient agar. Agar colonies attain a size of 1 to 3 mm. in 24 hours and after incubation for 48 hours attain a diameter of 5 to 7 mm. The colonies are moist, slightly raised, round and entire. While the growth is not mucoid, the growth is so moist that it will streak down an inclined surface. Thus, a colony developing at the top of an agar slant will run down the slant during incubation, causing a streak of growth. When grown in broth the organism produces an even clouding of the medium with little sediment and no pellicle formation.

The organism produces a yellowish-tan to salmon-pink pigment. The production of pigment is more pronounced on some media than on others. Indol is not formed,  $H_2S$  is not produced, and gelatin is not liquefied. Litmus milk remains unchanged. Nitrates are vigorously reduced to nitrites. Ammonia is not produced in nitrate peptone broth. On Loeffler's serum there is a light to moderate growth, less abundant than on agar. There is little pigment production on this medium. On potato a light growth occurs and a moderate amount of tan pigment is produced. If incubation is continued for 10 days, secondary colonies appear on the primary growth. These colonies are 0.5 to 1 mm. in diameter and produce a bright orange pigment, much deeper in color than that of the original culture. On coagulated egg yolk a vigorous growth takes place. The growth is dryer than that on agar or Loeffler's serum. On this medium the pigment production is most pronounced, the growth being salmon pink. After incubation for two weeks the growth on egg yolk appears dry, raised and greatly wrinkled, resembling in many respects the growth of tubercle bacilli.

The organism was tested for its ability to produce acid and gas from glucose, levulose, galactose, lactose, sucrose, glycerol, mannitol, sorbitol, arabinose, xylose, raffinose, maltose, adonitol, salicin, inulin, dextrin and starch. No acid or gas production was noted in any of the tests.

#### PATHOGENICITY

*Corynebact. equi* apparently is non-pathogenic for laboratory animals. Rats and guinea pigs were not affected by large doses administered intraperitoneally. Rabbits were injected intravenously with 1 cc of broth culture. The animals remained normal and continued to gain in weight during a 60-day period of observation.



Old horses were injected intravenously with one agar-slant culture of the organism. The injection was followed by an immediate rise in temperature, increased rate of pulse and respiration, dullness and loss of appetite. The temperature reached 106° F. After 48 hours the temperature began to decline and the horse returned to normal. Subcutaneous injection of the bacterium in horses gave rise to local swellings that were hot and painful, followed by abscess formation. The abscesses ruptured and discharged a thick yellowish pus.

Magnusson<sup>1</sup> has reported the reproduction of the disease in a 3-month-old foal by intratracheal injection of the organism. The writers have been unable to reproduce the condition by injection of cultures into the mouth and nasal passages. Two foals, aged 2 months and 3 months, were used. Large amounts of culture were injected into the upper nasal passages with a long-nozzle syringe. At the same time suspensions of the organisms were injected into the throat. The foals remained healthy and there were no apparent ill effects from the exposure.

No exotoxins have been demonstrated in filtrates of broth cultures of the bacilli.

#### SEROLOGICAL REACTIONS

Magnusson<sup>1</sup> reported that he was unable to produce agglutinins in rabbits through repeated intravenous injections. The writers have produced agglutinating sera by the intravenous injection of horses. The animals were given four injections at intervals of seven days. The first two injections consisted of the growth from one agar-slant culture. The last two were the growth from two agar-slant cultures. Seven days after the last injection the animals were bled. At this time the sera had a titre of 1:100. Normal horse serum fails to agglutinate the organism. Insufficient work has been done to justify any conclusions as to the serological characters of the bacterium.

#### REFERENCES

- <sup>1</sup>Magnusson, H.: *Arch. f. Wiss. Prakt. Tier.*, 1 (1923), p. 22.
- <sup>2</sup>Miessner, H. and Wetzel, R.: *Deut. Tierärztl. Wchnschr.*, xxxi (1923), p. 449.
- <sup>3</sup>Lütje, F.: *Deut. Tierärztl. Wchnschr.*, xxxi-1923, p. 559.
- <sup>4</sup>Lund, L.: *Deut. Tierärztl. Wchnschr.*, xxxii (1924), p. 4.

Newspaper reports of the death of four sailors from rabies, on one of the U. S. battleships sailing in eastern waters, following the smuggling of a dog on board the ship while in port at Cheefoo, China, give startling evidence of the risk involved in an apparently harmless escapade.

# CLINICAL AND CASE REPORTS

## SWINE ERYSIPELAS\*

By J. B. TAYLOR, *Brookings, S. Dak.*

*Animal Health Laboratory, South Dakota State College*

The organism of swine erysipelas was discovered by Löffler, in 1885. It is a slender, straight or slightly curved, Gram-positive rod and grows readily on most of the common culture media. In this laboratory cultures were obtained from the spleen of infected hogs on brain-veal-agar plates and shake cultures incubated at 37.5° C. for three or four days.

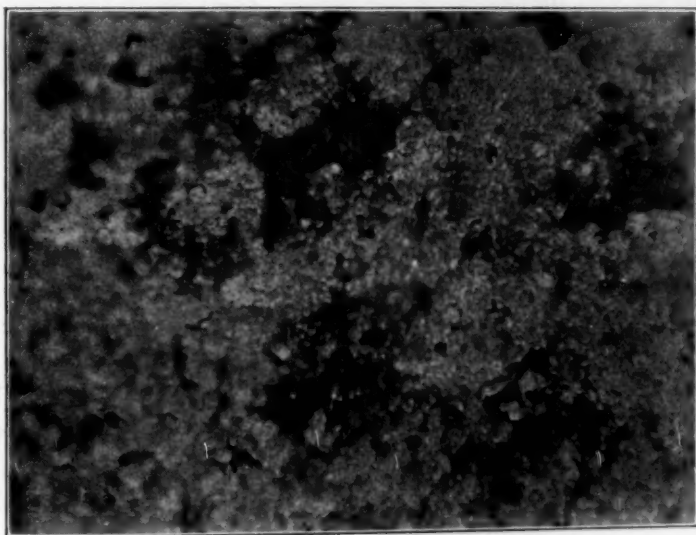


FIG. 1. Swine erysipelas organism.

Cultures were obtained also by placing a small piece of splenic pulp in tubes of brain-heart-infusion media and allowing them to remain in the ice-box for five days. In this method of culture, most of the secondary organisms failed to develop and the organ-

\*Received for publication, October 10, 1931.

isms of swine erysipelas appeared to be quite numerous when smears were made and stained by Gram's method. For animal inoculation pigeons and white mice were used. Small pieces of splenic pulp were ground up in sterile bouillon. Pigeons were inoculated in the pectoral muscles, and mice intraperitoneally. The pigeons and mice died in three to five days. The organisms could be found in large numbers in smears made from the heart-blood of the pigeons and the spleens of the mice.

The presence of swine erysipelas in herds around Utica and Brookings, South Dakota, was definitely established by me at this Laboratory, in May, 1931, and October, 1931.

The cultures isolated were sent to the Bureau of Animal Industry and the diagnosis confirmed by positive agglutination tests.

The presence of swine erysipelas in the United States was definitely established by the Bureau of Animal Industry, in 1920. The principal lesions in the infected herds here have been swelling and darkening of the spleen, swelling of the lymph-glands, arthritis and skin lesions which resembled elevations like hives. It is not necessary to go into detail about the disease here, as an excellent description is given in "Special Pathology and Therapeutics of the Diseases of Domestic Animals" (Volume I), by Hutyra and Marek.

Swine erysipelas may in time become quite a serious problem to those raising hogs. When premises are infected, it is impossible to raise healthy hogs and a number of farmers have had to give up raising them. It seems that the organism is capable of living for long periods of time in the soil. This organism may also become a serious menace when hog cholera virus and serum are produced, as the infection might be spread in this way unless the serum and virus are checked by cultural methods and inoculation of pigeons before being released.

### FLATTENED OR DEFORMED TRACHEA

*By W. F. GUARD, Columbus, Ohio*

*College of Veterinary Medicine, Ohio State University*

*Subject:* A black mare, aged thirteen years. Had been breathing hard for some time; gradually getting worse. Unable to do any work. Has been eating out of a high manger.

*Symptoms:* Animal apparently normal in all respects except for difficult breathing. An inspiratory and expiratory dyspnea



FIG. 1. Cross section of lumen of flattened trachea before operation.

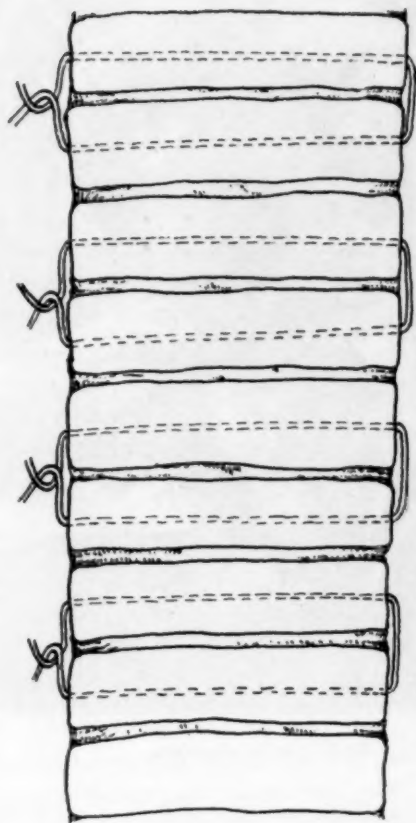


FIG. 2. Horizontal front view of trachea with wire sutures (staple type).

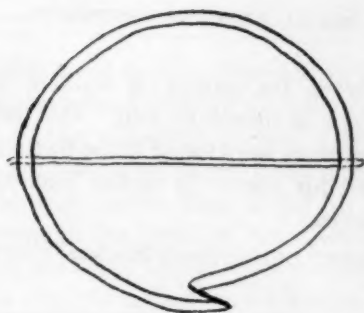


FIG. 3. Cross section following operation, showing a single wire in position.

is apparent even when the animal is walked, and is greatly exaggerated when she is forced to trot. On palpation of the trachea, the tracheal rings were found to be flattened and almost completely collapsed for about 12 inches just anterior to the entrance to the trachea.

*Diagnosis:* Flattened or deformed tracheal rings (fig. 1).



FIG. 4. Method of suturing.

*Treatment:* The animal was operated in a standing position with the use of a local anesthetic. An incision about twelve inches long was made on both sides of the neck, exposing the two edges of the trachea. The skin and muscles were retracted near the center of the area so as to expose the anterior surface of the trachea. The interannular ligament was partially severed between two cartilages at about the middle of the collapsed area, in order to permit passing a finger inside the trachea to direct the succeeding steps of the operation.



A long, straight, sac needle, threaded with silver-wire suture material, was then passed through the lumen of the trachea at the lowest point of the collapsed portion. The needle was then returned through the lumen of the trachea so as to form a staple stitch with the wire suture (figs. 2 and 3). Four such sutures were placed through the lumen of the trachea so as to cover the entire collapsed portion. The anterior surface of the cartilaginous rings was then slightly nicked with a scalpel in order to weaken the anterior wall. The wire-staple sutures were then pulled together so as to cause the trachea to take on its proper shape. These were twisted and the ends permitted to stick out through the edges of the wound (fig. 4). The wound was then sutured and a protective dressing applied over the region. The wire sutures were left in position seven days. At this time they were removed. The wounds were completely healed in about four weeks and the animal apparently made a complete recovery.

It might be practical to substitute heavy catgut for the silver wire. However, the author would fear some secondary trouble resulting from the many strands of gut in the trachea.

*Acknowledgment:* The author desires to thank Dr. H. C. H. Kernkamp, of the University of Minnesota, for preparing the schematic drawings of the method of suturing the tracheal rings (figs. 1, 2 and 3).

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## BILATERAL SCROTAL HERNIA

*By* W. F. McLENDON, *Athens, Ga.*

*Division of Veterinary Medicine, Georgia State College of  
Agriculture*

*Subject:* Grade Percheron colt.

The colt was brought to the hospital of the Veterinary Division with a history of having an enlarged scrotum. Upon examination we found a bilateral hernia and the scrotum contained not only the testicles but several feet of intestines.

*Operation:* The colt was given one ounce of chloral hydrate per rectum. This produced profound anesthesia. An incision was made anterior to the scrotum and directly over the hernial opening. Through this incision the testicle and tunica were brought out and the intestines forced back into the abdominal cavity. The tunica and cord were ligated close to the ring and the

testicle ablated. The ligated stump of the tunic was pushed through the hernial opening and the opening sutured with chromic catgut. A similar operation was done on the other side. The colt made an uneventful recovery and was discharged in 15 days.

### ACUTE PULLORUM DISEASE IN AN ADULT HEN

By H. J. STAFSETH, W. W. THOMPSON and C. G. GREY

*Michigan State College, East Lansing, Michigan*

*Subject:* Barred Rock hen, approximately eighteen months old. This hen had just been returned from a southern egg-laying contest, where she had laid over three hundred eggs and earned over three hundred points for size and quality of eggs. A few days after her return, this hen was found in a droopy condition and the senior author was asked to examine her.

*Symptoms:* Greenish droppings, droopiness, ruffled feathers, and weakness to the extent of inability to stand. There was no marked somnolence. The body temperature was 109° F. One ounce of "iodine vermicide" was given, followed by small quantities of "iodine suspensoid" in milk. The following day the bird seemed improved, as she could stand up and was singing a little from time to time. However, the next day she seemed worse again and the body temperature was now 109.2° F. Two days later, the bird was found dead.

*Autopsy:* Edema of lungs, fibrinous exudate in pleural cavity, pericarditis, petechial hemorrhages on the fat of the heart, swollen liver with mahogany color, spleen pale and mottled but of normal size, ovary regressive, vestige of right Müllerian duct containing a watery cyst about three inches long and one and one-half inch in width, kidneys pale and filled with urates, ecchymotic hemorrhages in intestinal mucous membrane.

*Serological reaction:* A small clot of blood was macerated with a drop of our stained field-test pullorum antigen and a strong positive reaction was obtained almost instantaneously.

*Bacteriological examination:* Cultures of *Salmonella pullorum* were obtained from the heart, liver and spleen. No other pathogens were found.

*Diagnosis:* Acute septicemic pullorum disease.

**BOVINE PERIOCCULAR CARCINOMA**

By FRANK THORP, JR., and ROBERT GRAHAM

*Laboratory of Animal Pathology and Hygiene, University of Illinois, Urbana, Illinois*

*History:* A Hereford female, 10 years old, was shipped from Texas to Illinois, November, 1930, for feeder purposes. Upon arrival the conjunctiva of the left eye of this cow appeared inflamed. About February, a small light red growth appeared on the lower eyelid, which was followed by a marked swelling



FIG. 1. Epidermoid carcinoma (periocular). Note papillary growth on lower eyelid. The tumor mass involved the subcutaneous tissue in the region of the facial bones beneath the eye.

anterior and ventral to the medial canthus of the eye. The area continued to increase in size and extended to include the periorbital tissue. No inflammation was noted on the structures of the eye. The enlargement was confined to the area of the lachrymal and malar bones. The orbital fossa was apparently not involved as there was no visible protrusion of the eyeball (figure 1).

The possibilities of an infected tooth, sinus infection, malignancy or deep-seated injury entailing a long period of treatment,

together with the value of the animal, suggested the advisability of sending the cow to the butcher. En route to Chicago, via rail, death occurred from unknown cause. The periocular enlargement was removed and delivered to the laboratory for examination.

*Gross pathology:* An examination of the tissue on cut section revealed its neoplastic character. The tumor was semi-firm in consistency but not hard. The portion of growth located anterior

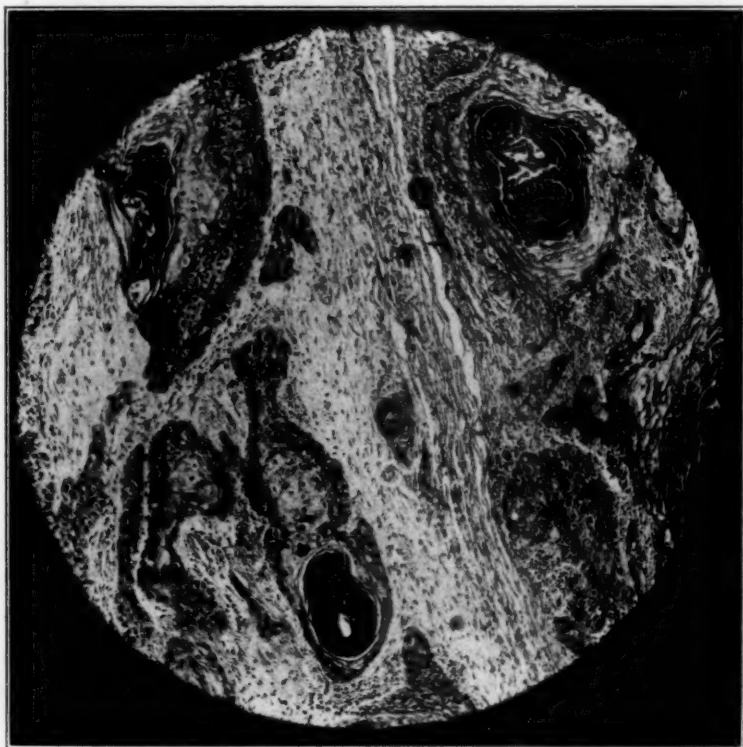


FIG. 2. Epidermoid carcinoma ( $\times 150$ ). Permeating the subcutaneous periocular tissue are squamous cell columns showing basal, intermediate and keratinized cells. The keratinized cells are characterized by laminated whorls.

to the medial canthus of the eye was circumscribed by a thin connective membrane which was frequently perforated by the tumorous processes. In the tumor proper the neoplastic processes appear as dark areas penetrating the white subcutaneous tissues.

*Microscopic pathology:* On section, a microscopic examination of the proliferating neoplastic tissue processes showed it to consist of epithelial cells. The tumorous growth is characterized

by connected cell masses of interpapillary epithelium. These branching columns extend into the derma and subcutaneous tissue. A tissue section gives the appearance of numerous isolated cell islands due to the extension of the branching cell cords in three dimensions. As a result of squamous epithelial proliferation of cell cords, the three usual layers of basal, intermediate and keratinized cells are recognized. Keratinization takes place in the center of the cell masses. The flat horny cells are deposited in concentrically laminated whorls or epithelial "pearls" away from the peripheral basal layer of cells. Not all of the cellular columns showed advanced central keratinization (figure 2).

*Histopathological diagnosis:* Epidermoid carcinoma.

### TRIPLET CALVES

*By M. J. HARKINS, Conshohocken, Pa.*

The accompanying photograph shows a proud mother and her triplet calves, dropped September 8, 1931. The picture was taken seven days after the birth of the calves, which are out of

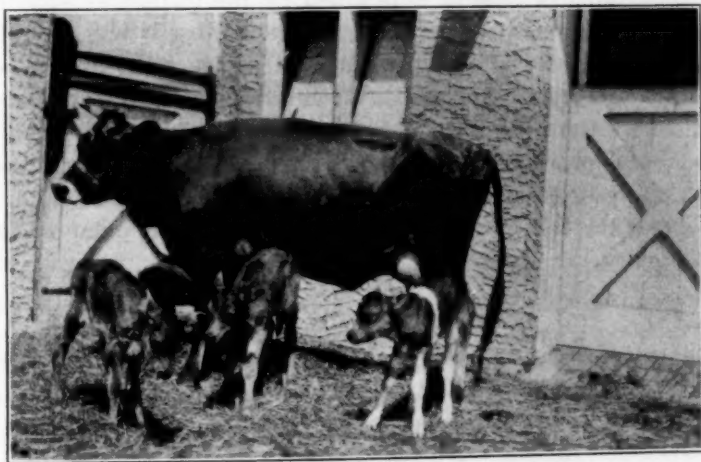


FIG. 1. A proud mother and her three babies.

Coronation King's Rose, 873071, a two-year-old Jersey heifer, sired by Sybil's Gamboge Trinity, 228076, owned by Mr. George D. Widener, Erdenheim Farms, Inc., Chestnut Hill, Pa. Of the trio, two are bulls and the other a heifer. All were normal and healthy, and doing nicely at latest reports.



### PIGEON-POX IN MICHIGAN

By H. J. STAFSETH, *East Lansing, Michigan*

*Michigan State College*

On November 2, a pigeon fancier in a nearby city reported that his pigeons were affected with pox. The author was given an opportunity to examine the pigeons and found that a considerable number of them showed typical pox lesions on various parts of the body. Most of the scabs were found on the feet, legs and near the base of the beak. A few birds showed cankers in the mouth and two of them showed difficulty in breathing. However, the latter symptom had been observed in previous years without any evidence of pox.

Scabs were taken from these pigeons and macerated in fifty per cent glycerinated water. Pigeons inoculated with this virus developed extensive lesions of pox.

According to the owner, this disease was contracted in a pigeon and pet show in one of Michigan's largest cities. Since this show was held, pox outbreaks have been reported from three cities in this state.

Many valuable pigeons were killed by the owners as soon as pox lesions were noticed. This was done because it was thought that the disease would permanently harm the birds and in an effort to get rid of the malady. Since pigeons may recover completely from pox such a procedure is unwise. All pigeons used for show purposes and those which may come in contact with pigeons returned from shows should be vaccinated.

This is the first outbreak of pigeon-pox that has come to the attention of the writer.

### A Dog Has Some Rights

A justice of the peace in Grand Rapids, Mich., recently came to the rescue of man's best friend. It appears that a motorist deliberately struck a fox hound on the road. Three witnesses testified that the dog was a good hunter. Documentary evidence in the form of pictures was submitted to show that the dog was a valuable playmate for the owner's two children. The justice instructed the jury that a dog, if properly licensed, is entitled to the same consideration from a motorist as a child, and the owner may recover damages for its loss through negligence upon the part of the motorist. The jury gave a verdict of \$90 and costs for the owner against the motorist.

# ABSTRACTS



A SYSTEMATIC STUDY OF THE DEGENERATION OF ARTICULAR CARTILAGE IN BOVINE JOINTS. Granville A. Bennett and Walter Bauer. *Amer. Jour. Path.*, vii (1931), 4, p. 399.

The finding of areas of degeneration in the articular cartilages of the carpo-metacarpal articulation of all cattle over two years of age would appear to be an adequate explanation of the synovial fluid differences observed and which have been previously reported. These areas of progressive degeneration in articular cartilage have been studied systematically and the successive changes have been described and illustrated. The vascular articular cartilage of embryos and calves becomes avascular before the animals attain the age of two years. Pronounced rearrangement of the subchondral bone trabeculae resulted in a relatively deficient bony support of the medial articular cartilage where the degenerative lesions occur. Etiological factors of such cartilage lesions are probably repeated trauma in weakly constructed articulations with deficient subchondral bone support as an important predisposing factor.

STUDIES ON MILK SECRETION. THE INFLUENCE OF INANITION. John W. Gowen and Elmer R. Tobey. *Jour. Gen. Physiol.*, xv (1931), 1, p. 45.

The yield and composition of cow's milk were determined at various intervals during periods of starvation. The composition of the milk showed changes which were progressive in the sense that they followed a definite course. They were characterized by a marked lowering in the amount of milk produced, by an increase in the total solids (chiefly an increase in the percentage of fat and ash, with a slight increase in proteins), and by a pronounced decrease in the lactose. The decrease in lactose corresponded with a decrease in the dextrose content of the blood, thereby supporting the conclusion that the lactose of milk has as its precursor dextrose of the blood. All the changes in milk composition during starvation can be directly related to the simultaneous changes in the blood.

ON THE MECHANISM OF MILK SECRETION. THE INFLUENCE OF INSULIN AND PHLORIDZIN. John W. Gowen and Elmer R. Tobey. Jour. Gen. Physiol., xv (1931), 1, p. 67.

The effects of starvation and of insulin furnish concordant proof for the theory that the lactose of milk is derived from the sugar of the blood. The fact that the different constituents of milk, the fat, the lactose, the nitrogen, and the ash, do not exactly parallel each other in their behavior throughout these experiments indicates that in all probability they have separate origins. Butterfat appears to have a rate of secretion which is more or less independent of the other constituents and higher in amount. The fat of the blood is very likely deposited in the udder as fat corresponding to body fat, from which source it was metabolized into the fat of milk shortly before it was needed for milk secretion. The authors conclude that in milk secretion a balance is maintained between the osmotic pressure of the milk and of the blood. Thus, when the sugar of the milk is reduced, either through starvation or by insulin, the ash constituents rise to compensate for this reduction and make the osmotic pressure of the milk similar to that of the blood.

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THE SPECIFIC CYTOTOXIC ACTION OF TUBERCULIN IN TISSUE CULTURE. Joseph D. Aronson. Jour. Exp. Med., liv (1931), 3, p. 387.

Tuberculin from the human and from the bovine type of bacillus inhibits the growth of cells from explants of bone marrow, spleen and testes of tuberculous guinea pigs, and is toxic for these cells, but has no effect on explants of the same tissues from non-tuberculous animals. Tuberculins from the avian, bovine and human types of tubercle bacillus as well as "tuberculin" prepared from the Duval and from the Kedrowsky strains of *M. leprae* inhibit the growth of the cells of explants of the spleen and bone marrow of tuberculous fowls and are toxic for these cells, but have no effect on the explants from tissues of non-tuberculous chickens. Tuberculin from other acid-fast bacteria has no inhibitory or toxic action on explants of tissues from either tuberculous or non-tuberculous guinea pigs or fowls. The author concludes that the sensitivity of tuberculous tissues is inherent in the cell, and that it cannot be passively transferred.

THE HISTOPATHOLOGY OF NUTRITIONAL ENCEPHALOMALACIA OF CHICKS. Abner Wolf and Alwin Pappenheimer. Jour. Exp. Med., liv (1931), 3, p. 399.

The salient features of the histopathology of the brain lesions may be summarized as (1) edema, with separation and disruption of the cellular and fibrillar elements; (2) degeneration and necrosis of the Purkinje cells, and of the small cells constituting the granular layer of the cerebellum; (3) small hemorrhages scattered through the cortical white matter, or within the cortical zones; (4) hyaline capillary thrombi in and about the necrotic areas. Whatever may be the nature of the nutritive error or deficiency which is responsible for encephalomalacia in chicks, the immediate cause must be looked for in some agent or condition which impairs the capillary circulation of the brain. The essential lesion is an ischemic necrosis, followed, if the animal survive, by reparative organization of the dead tissue.

SWINE INFLUENZA. I. EXPERIMENTAL TRANSMISSION AND PATHOLOGY. Richard E. Shope. Jour. Exp. Med., liv (1931), 3, p. 349.

Swine influenza has been induced in pigs by the intranasal instillation of material from spontaneous cases of the disease as occurring epizootically in eastern Iowa. The experimental disease has the same features as the epizootic. Eight strains of the virus have been established experimentally during three epizootic periods. The clinical disease induced by these eight strains has been in general the same although its severity and mortality have varied. The principal features of the pathology of swine influenza are an exudative bronchitis accompanied by a marked damage of the bronchial epithelium and its cilia, a peribronchial round-cell infiltration, and massive pulmonary atelectasis. The latter is modified somewhat by a round-cell infiltration of the alveolar walls. The lymph-nodes, especially the cervical and mediastinal, are hyperplastic and edematous. There is usually a mild to moderate acute splenic tumor. The mucosa of the stomach and colon is congested. The pneumonia following swine influenza is characteristically lobular in type and of the same general distribution as the atelectasis. The non-pneumonic areas of the lung are extremely edematous and congested.

SWINE INFLUENZA. II. A HEMOPHILIC BACILLUS FROM THE RESPIRATORY TRACT OF INFECTED SWINE. Paul A. Lewis and Richard E. Shope. Jour. Exp. Med., liv (1931), 3, p. 361.

A hemophilic bacillus has been regularly obtained in culture from the respiratory tract of a series of swine experimentally infected with swine influenza and from a small number of spontaneous field cases of the disease. It has not been observed in respiratory tract cultures from a group of swine free from influenza. The cultural and morphological characters of the organisms are described and the name, *Hemophilus influenzae* (var. *suis*), suggested. The organism exhibits marked serological diversity, since only two out of eight strains studied were serologically identical. It is usually non-pathogenic for rabbits and white rats, and irregularly pathogenic for white mice. One strain of the organism was pathogenic for guinea pigs while two others were not. Eleven out of thirteen attempts to induce symptoms of disease in swine by intranasal instillations with pure cultures of *H. influenzae* (*suis*) were negative.

SWINE INFLUENZA. III. FILTRATION EXPERIMENTS AND ETIOLOGY. Richard E. Shope. Jour. Exp. Med., liv (1931), 3, p. 373.

A virus has been demonstrated from Berkefeld filtrates of infectious material from experimental cases of swine influenza which, when administered intranasally to susceptible swine, induced a mild, usually afebrile illness of short duration. The changes in the respiratory tract resembled those in swine influenza but were usually much less extensive. When the filtrable virus was mixed with pure cultures of *H. influenzae* (*suis*) and administered to swine, a disease identical chemically and pathologically with swine influenza was induced. The filtrable virus of swine influenza and *H. influenzae* (*suis*) seem to act in concert to produce swine influenza and that neither alone is capable of producing the disease. One attack of swine influenza usually renders an animal immune to reinfection. Blood serum from an animal made immune in this way neutralizes infectious material from swine influenza *in vitro*, as shown by the failure of the mixture to produce disease in a susceptible animal. The virus can be stored in a dried state or in glycerol for several weeks.



THE ELECTRICAL PROCESS OF MILK PASTEURIZATION. Sally Hamilton Stabler. Amer. Jour. Hyg., xiv (1931), 2, p. 433.

Electrical pasteurization at 73° C. is equally as effective, both in reduction of bacterial count and in the kinds of organisms destroyed, as the holding process of pasteurization at 62° C., as used commercially. Electrical pasteurization at 62° C., while it destroys the same kinds of organisms, does not reduce the bacterial count of milk to so great an extent as the holding method of pasteurization at 62° C., as used commercially. Electrical pasteurization has no effect upon the total cream content of milk. It diminishes the rate at which cream rises, so that the milk seems to have more cream after 24 hours, whereas the holding method increases this rate. Both kinds of pasteurized milk show the same cream volume after 144 hours. Electrical pasteurization has no effect upon the butterfat content.

THE USE OF LIQUOR FOLLICULI IN OBSTETRIC VETERINARY PRACTICE. Geocoino Pighini, Reggio Emilia and Stefano Rivabella. Endocrinology, xv (1931), 3, p. 195.

In veterinary obstetric practice, animals were injected with follicular extract or with this in combination with thyroid and phenol ("estro follicolina trioidizzata e fenicata"). Good results were obtained in ten females which had never before been in rut, five females for a long period without estruation; twelve females with retention of the placenta; six affected with chronic catarrhal purulent endometritis; and two females with the retention of dead foetuses. The treatment with the estro follicolina is a valuable means in veterinary obstetric practice for all of these cases and especially for cases of endo-uterine inflammatory processes, in the treatment of which the most rational therapeutic means often have hitherto been ineffective.

THE EFFECT OF SOME FACTORS UPON THE BLOOD SUGAR OF EMBRYO CHICKS. G. Vladimirov. Jour. Physiol., lxxii (1931), 4, p. 411.

Experiments undertaken in order to ascertain the effect of different agents upon the blood-sugar level in chicken embryos gave the following results: The introduction of water into the

air space of the egg decreases the blood-sugar level by diluting the blood; carbon dioxid and insulin do not influence the blood-sugar level regularly; the influence of adrenalin appears only in the last few days and then only to a very feeble degree. The author concludes that the effects of hormones upon the carbohydrate metabolism in the embryonic state is very insignificant.

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EPIZOOTIC FOX ENCEPHALITIS. III. EXPERIMENTAL TRANSMISSION. R. G. Green, N. R. Ziegler, E. T. Dewey and J. E. Shillinger. Amer. Jour. Hyg., xiv (1931), 2, p. 353.

The inoculation of brain and spinal cord virus by cisterna puncture into foxes raised under quarantine conditions has been found to be a successful means of maintaining the encephalitis virus. In the experiments reported, virus stored in 50 per cent glycerin five and one-half months appears to have the same pathogenic properties as does fresh virus. Intramuscular injection of brain virus appears to transmit the disease almost as uniformly as does inoculation by cisterna puncture. The spleen of a fox dying of the experimental disease is very active in transmitting the infection to young foxes by cisterna puncture. The disease has also been transmitted by means of spleen virus into the peritoneal cavity. The virus has been demonstrated in the heart-blood of a fox dying of the experimental infection. Corneal scarification with the subsequent application of known virulent virus failed to transmit the disease in the case of five foxes. The disease has also been transmitted to young foxes experimentally by skin scarification, by intratesticular injection, and by inoculation of the nasal cavity. While the mortality of the natural disease seldom appears to exceed 20 per cent of those exposed, the mortality of experimentally inoculated young foxes is approximately 70 per cent.

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BRUCELLA INFECTIONS IN TUNIS AND IN MALTA. I. F. Huddleson. Abst. Arch. Path., xii (1931), 2, p. 294.

The organisms of *Brucella* were most frequently demonstrated in the blood during a rise in fever in the patient. All strains from cases in man in Tunis and in Malta were, by the author's methods, of the caprine or *B. melitensis* type, *i. e.*, neither bovine nor porcine varieties. Cases were found to be more acute and to last longer.

## PUBLICATIONS RECEIVED

- Pullorum Disease in Massachusetts, Eleventh Annual Report on Eradication of. H. Van Roekel. (Bul. 58. Mass. Agr. Exp. Sta., Amherst, Mass., May, 1931.) Illustrated. pp. 24.
- Porto Rico, Annual Report of the Insular Experiment Station of the Department of Agriculture and Labor of. Fiscal year 1929-30. San Juan, P. R. 149 pp.
- New South Wales, Department of Agriculture. Live Stock Diseases Report (No. 6). Year ended June 30, 1930. Sydney, Australia. 18 pp.
- Agricultural Research Workers in the British Empire, List of. 1930. His Majesty's Stationery Office, London, England. 212 pp. (Price 1 sh. net)
- Animal Rescue League of Boston. 32nd annual report, covering 1930. 88 pp. Boston, Mass.
- Studies on Contagious Streptococcic Mastitis. J. M. Rosell. Reprint from *Cornell Veterinarian*, xxi (Jan., 1931), pp. 80-85.
- Kansas State Agricultural College Bulletin. Catalogue Number. Announcements for the session of 1931-32. Manhattan, Kansas. 352 pp.
- Siam. Report of the Veterinary Division (Department of Agriculture). Period 1924 to 1929. 18 pp. and map. Ministry of Commerce and Communications, Bangkok, Siam.
- A Study of Bovine Coccidiosis. Irl Donaker Wilson. Tech. Bul. 42 (May, 1931), Virginia Agricultural Experiment Station. 42 pp. Blacksburg, Va.
- Further Studies of the Test-Tube Agglutination Test for the Diagnosis of Bang's Disease (Contagious Abortion). C. P. Fitch, C. R. Donham and W. L. Boyd. Tech. Bul. 77 (June, 1931), Minnesota Agricultural Experiment Station. 69 pp. St. Paul, Minn.
- Toxicity of Colloidal Iodine. William Nyiri and Louis Dubois. Reprint from *Jour. Amer. Pharm. Asso.*, June, 1931. 7 pp.
- Salt Sick: Its Cause and Prevention. Mineral Supplements for Cattle. R. B. Becker, W. M. Neal and A. L. Shealy. Bul. 231 (June, 1931), Florida Agricultural Experiment Station. 23 pp.
- Alabama Polytechnic Institute, School of Veterinary Medicine. Announcements for 1931-32. 23 pp. Auburn, Ala.
- Keeping the Farm Flock Healthy. H. H. Alp. Circ. 374 (July, 1931), Illinois Agricultural Experiment Station. 16 pp. Urbana, Ill.
- The Glorification of Parasitism. Maurice C. Hall. Reprint from *Scientific Monthly*, xxxiii (July, 1931), pp. 45-52.
- The Effect of Pasteurization upon the Vitamin C Content of Milk in the Presence of Certain Metals. E. W. Schwartz, F. J. Murphy and Gerald J. Cox. Reprint from *Jour. Nutrition*, iv (July, 1931), pp. 211-225.
- Studies on Sweet Clover Disease. Lee M. Roderick and A. F. Schalk. Tech. Bul. 250 (July, 1931), North Dakota Agricultural Experiment Station. 56 pp. Fargo, N. Dak.
- London School of Hygiene and Tropical Medicine (University of London) Prospectus of the courses of study in tropical medicine and hygiene. July, 1931. 16 pp. London, Eng.
- An Infectious Brain Disease of Horses and Mules (Encephalomyelitis). C. M. Haring, J. A. Howarth and K. F. Meyer. Circ. 322 (August, 1931), California Agricultural Experiment Station. Berkeley, Calif.



### Regular Army

Major Paul R. King is assigned to duty at Jefferson Barracks, Mo., upon completion of his present tour of foreign service.

Major John H. Kintner is assigned to Randolph Field, Texas, upon completion of his present tour of foreign service.

Major Howard M. Savage is relieved from his present assignment and duties at New York general depot, Brooklyn, N. Y., effective in time for him to proceed to New York City and sail on or about January 13, 1932, *via* Government transportation for the Philippine Department.

Major Will C. Griffin is relieved from assignment and duty at Fort Brown, Texas, effective in time for him to proceed to San Francisco, Calif., and sail on transport scheduled to leave that port on or about February 4, 1932, for the Philippine Department.

Major Raymond Randall is relieved from further assignment and duty at the Army Medical School, Army Medical Center, Washington, D. C., effective in time for him to proceed to New York City and sail on or about January 13, 1932, *via* Government transportation for the Philippine Department. Upon arrival at Manila, Major Randall will report to the commanding general for assignment to duty as a member of the United States Army Medical Department Research Board.

Major Isaac O. Gladish is relieved from further assignment and duty at Fort Omaha, Nebr., attending veterinarian at Fort Crook, Nebr., and additional duty at headquarters 7th Corps Area, effective upon the expiration of his present leave of absence, and will proceed to Fort Bragg, N. C., for duty.

Major William R. Wolfe is relieved from duty at the purchasing and breeding headquarters, Colorado Springs, Colo., effective on or about February 1, 1932, and will proceed to Fort Francis E. Warren, Wyo., for duty.

Captain Harry L. Watson is relieved from duty at Fort Francis E. Warren, Wyo., effective on or about February 1, 1932, and will proceed to Colorado Springs, Colo., for duty at the purchasing and breeding headquarters.

The retirement of Colonel William G. Turner from active service on October 31, 1931, because of disability, is announced.

### Veterinary Reserve Corps

#### *New Acceptances*

Ericson, Eric Oscar . . . . . Capt. . . . 5127 Dodge St., Duluth, Minn.  
 Romberger, Earl Ellsworth. Capt. . . . 340 N. 6th St., Reading, Pa.  
 McCreary, Virgil Dudley . . . 2nd Lt. . . Brewton, Ala.  
 Olson, Carl, Jr. . . . . 2nd Lt. . . Mayo Foundation, Rochester, Minn.  
 Wills, Marion Hudson . . . . 2nd Lt. . . R. R. No. 8, Paris, Ill.

#### *Promotions*

Parsons, Ralph Allen . . . . To Major. 203 Federal Bldg., Olympia, Wash.  
 Massinger, Charles Eber. . . To 1st Lt. 805 Main St., Phoenixville, Pa.

## MISCELLANEOUS



### "CURE ALLS" CURE NONE

*By* DWIGHT ANDERSON



Disaster usually overtakes tuberculosis patients who forsake the recognized method of treatment afforded by rest, fresh air and nourishing food to follow "discoveries." There are many announcements of so-called cures each year. They gather a large toll of lives among those who abandon the well-tried regimen of approved care. Hope dies slowly, and most people believe there is a quick cure for every ailment if one could only find it. Reputable physicians know of no such drug for tuberculosis. But often those who try such remedies think they notice a sudden improvement, for the progress of the disease is marked by variations—"ups and downs." A feeling of temporary optimism is created which may lead to the abandonment of the long period of rest prescribed by the physician.

The last 20 years has seen 721 "cures" for tuberculosis come and go. There may have been more than this number, for the figure stated refers to those which have been exploited sufficiently to find a place in the files of the National Tuberculosis Association, which sponsors the Christmas seal sale, and conducts the all-year-round campaign against the disease. The primary interest of this organization would be to give sanction to such a cure if it were developed, but it also seeks to protect sick people from imposition by quacks, as well as from being harmed by innocent persons who are carried away by the enthusiasm of temporary success.

A peep into these records of healing nostrums and devices discloses some interesting evidences of the credulity of human nature:



Preparations of kerosene and turpentine, selling at \$5.50 per bottle; a mixture of alcohol, water and vegetable extracts claimed to be an herb medicine used by the Choctaw Indians; other preparations containing creosote and malt extract, turpentine and ammonia. The latter compound was called a "penetrating germicide" and its vendors claimed it would also cure pneumonia, influenza, rheumatism, lumbago, neuralgia, neuritis, locomotor ataxia and varicose veins—evidently running down the alphabetical list of ailments and selecting those most common.

A sanatorium for tuberculosis offered a treatment of smoke from medicated wood piped in from outside; another advertised that patients were cured by a liquid brewed from 1320 different herbs! An inhalor placed on the market a few years ago at \$50 gave out a "medicated vapor of dried herbs," and not long ago there was a veritable epidemic of cabinets sending "ozone into the lungs and blood."

Hundreds of such commercial remedies have been investigated by the federal government through the Bureau of Chemistry and the Post Office Department and not one has made good its claims. Advertising clubs have helped to draw popular attention to these fakes; newspapers and magazines have refused to publish their advertising at any price; the Better Business Bureau has assisted with prosecutions, while many of the 2,084 affiliated tuberculosis associations throughout the United States in numerous instances assisted in gathering evidence of the worthlessness of the claims of such charlatans.

But not all the claims of cures have been advanced by a dishonest person seeking to profit from the misfortune of tuberculosis sufferers. From time to time, honest, but misguided persons come forward with preparations they think are positive cures. In 1913 four people walked from Los Angeles to Washington and delivered to President Wilson's secretary a "secret" formula which they claimed had cured them of tuberculosis. It is probable they never had tuberculosis at all, and the walk undoubtedly did them good.

Many persons have advocated the inhalation of various vapors. They base their claims on the simple idea that the lung tissue harbors the tubercle bacilli and that if you force germ-killing vapor into every nook and cranny of the lungs, you are bound to get rid of the disease. But this is a fallacy, for any germicide strong enough to kill the tubercle bacilli also will kill the host. Yet harmless inhalations may give the patient a feeling of tem-

porary well-being which is immediately translated into a certainty that a cure has been found—a testimonial is written—and a new remedy brought to the attention of the public!

Investigation of such testimonials often reveals the shocking fact that they were doubtless honestly written, but that the authors are dead at the time official inquiry is set on foot.

The National Tuberculosis Association sponsors a Research Committee—financed with money derived from the annual Christmas seal sale—which for years has been conducting scientific investigations on the subject of tuberculosis, the complexities of which are baffling in many particulars. No specific cure for tuberculosis has yet been found. It is certain that when one is developed, and proved to be free from danger, it will receive approval and be given widespread publicity. In the mean time, all the energy and “will to live” of the patient should be put into allowing rest, fresh air, nourishing food and sunshine to do their work. Obedience to the doctor's orders involves indifference to rumors of new cures. The slow method is the surest, and has been proved again and again to be the law of life and health for those threatened with tuberculosis.

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### **Charles Wardell Stiles Retired**

Dr. Charles Wardell Stiles, chief of the Zoölogical Division of the U. S. Bureau of Animal Industry from 1891 to 1903, and subsequently chief of the Division of Zoölogy of the Hygienic Laboratory, now the National Institute of Health of the U. S. Public Health Service, retired from active duty on October 1, 1931. In honor of the occasion, 95 of Dr. Stiles' friends gave him a dinner on November 7. A distinguished gathering, representing the Public Health Service, Bureau of Animal Industry, Bureau of Plant Industry, Bureau of Biological Survey, U. S. National Museum, the medical departments of the Army and of the Navy, Johns Hopkins University and various other groups were present at the dinner. Dr. Maurice C. Hall presided at the dinner and the following speakers discussed Dr. Stiles' services in connection with the topics noted:

Dr. L. Stejneger, “Dr. Stiles and the International Commission of Zoölogical Nomenclature”; Dr. Wm. H. Welch, “Medical Aspects of Dr. Stiles' Work on Hookworm”; Dr. W. S. Thayer, “Dr. Stiles and His Work in Medical Fields”; Dr. A. M. Stimson, “Dr. Stiles' Work in the Public Health Service”; Dr. T. S.

Palmer, "Dr. Stiles as a Zoölogist"; Dr. Paul Bartsch, "Dr. Stiles and the Helminthological Society of Washington"; Dr. C. L. Marlatt, "Dr. Stiles' Work in Entomology"; Dr. Benjamin Schwartz, "Dr. Stiles' Work in the Bureau of Animal Industry," and Dr. N. A. Cobb, "Dr. Stiles Himself."

Dr. Cobb's speech was couched in a set of delightful verses which he read in the style for which he is noted among his associates. In conclusion Dr. Hall read some verses which he had written for the occasion, entitled, "To Charles Wardell Stiles."

### TO CHARLES WARDELL STILES

*By* MAURICE C. HALL

Pallid little children in the long-leaf southern pine,  
Languid darkies drowsing by the honeysuckle vine,  
Spanish moss a-drooping from the live oak trees.  
(Wait until tomorrow, for today we take our ease.)  
Something of a shiftlessness, too easily explained;  
Some call it southern indolence. (Are children so restrained?)  
The little children call for aid, and darker shadows fall.  
(Stiles has gone to Leuckart; will he hear the children's call?)

Snuff dippers, white trash, and eaters of the clay;  
Ground itch, dew itch; "Feelin' pore today."  
The old plantation's back in brush, the cotton crop is bad.  
"They took the darkey's mule today; the last durn thing he had."  
Straggly corn is growing on the hills of Arkansas.  
("Moonshine's all that we have left; never mind the law.")  
Runtly cattle, hill billies, "crackers" everywhere.  
(Stiles is home again at last, and he perhaps, will care.)

Hookworm larvae spawning in the warm southern sand  
(Wait a little, children, for help is close at hand).  
A clue from Porto Rico, a light is in the sky.  
For now the time is ripe at last; discovery is nigh.  
The finger points to hookworms, Necator comes to light.  
The drive is on, the battles rage, the enemy's in flight,  
The South is on the upward path, her children shout and play,  
For Stiles has found the enemy and Stiles has shown the way.

The bloom of health has put the roses back in pallid cheeks,  
Again the singing darkies drive the mules along the creeks,

The wheels are turning faster now, the cotton's growing high,  
For now the shadow's lifted from the darkened southern sky.  
Now millions tread with higher head, and strike a harder blow,  
And where the weeds had taken all, the southern flowers grow,  
To him who planned the battles, to him who led the way,  
Our dean of helminthology, all honor here today.

### Helping the Unemployment Situation

With unification of local activities for the relief of the unemployed a major objective, the President's Organization on Unemployment Relief is working with all national groups representing the religious, fraternal, civic, professional and commercial life of the country.

The Committee on Coöperation with National Groups and Associations is the unit of the President's Organization which is assisting directly in the guidance of this program. Eliot Wadsworth, of Boston, former Assistant Secretary of the Treasury, is chairman.

For the purposes of its project, the committee views each community as including numerous chapters or branches of national organizations. In seeking to bring about greater centralization of local efforts to relieve unemployment, it is working with national officers of these organizations. Through these national officers it is reaching hundreds of thousands of local branches with its recommendation that local units throw their support behind programs of centralized committees on unemployment relief in their communities.

Details of the program of coöperation with these national groups have been worked out at meetings in Washington, through other personal contact and in correspondence with local branches.

Mr. Wadsworth has pointed out that local unemployment relief activities are necessarily concerned, not only with money-raising, but with the continuing work of administering the funds efficiently and of creating employment. Mr. Wadsworth said:

Communities often ask why some national body has not given them a definite amount for their quota as in other drives. The answer is that there is no national drive. No one can estimate the aggregate national requirements. It is the extent of local need that sets the local quota. Each community must determine the amount it is to raise, based upon its own intimate knowledge of local conditions.

The same principle applies to the administration of relief. Relief work is by no means all measured in money. It is accomplished by spreading or creating work and in countless other ways devised to meet local conditions. Organization, systematic effort, and thoughtful planning are just as necessary as the fund itself.

The President's Organization has asked all national associations to cooperate by urging their affiliated local bodies to take part in the local work. The response has been extraordinary in its promptness and enthusiasm. It reminds me of the War days. The desire to do something is everywhere.

No one questions that there is serious need among our own people, and that there is no one to meet it but ourselves.

But apparently it is not clear to everyone how they can best undertake the work. I, therefore, say once more that the first step in dealing with unemployment problems is to have some local organization through which you can work.

This is a temporary emergency which is testing the fundamental American policy of freedom of action and self-reliance. It is a serious emergency, but no more impossible to deal with than others which we have met in the past. America has made an extraordinary record for open-handed generosity toward those in need of help all over the world. It is impossible to think that we will fail to help our own neighbors when they are the ones who happen to be in need now.

### **Rabbit is Not Chicken**

Acting on reports that certain promoters of back-yard rabbit-raising in eastern states were advertising that they were planning to open canneries for the purpose of putting up rabbit meat for sale as "chicken a la king," Dr. P. B. Dunbar, Assistant Chief of the Federal Food and Drugs Administration, recently made the following announcement:

There is no objection, under the federal Food and Drugs Act, to the distribution, within the jurisdiction of the Administration, of canned rabbit prepared from sound, wholesome stock and labeled for exactly what it is. But the housewife—and the canner or packer—may be sure that any attempt to sell rabbit meat as "canned chicken" will result in immediate regulatory action by federal officials who enforce the national pure food law, if interstate shipment is attempted. If such a mislabeled food is distributed only within the state where manufactured, however, the Administration has no power to act, under the law. In such a case, state food officers doubtless will take immediate action.

Under the Food and Drugs Act, a food can not be legally disposed of in interstate commerce if it is falsely labeled, according to Dr. Dunbar.

### **Not the First**

In the account of the meeting of military officers, held in connection with the recent Kansas City convention (October JOURNAL, page 564), it was stated that the meeting in question was the first of its kind to be held. This was in error, as a similar meeting was held at Los Angeles, in connection with the 1930 convention. This has been drawn to our attention by Dr. J. G. Townsend, of Los Angeles, Calif., who holds a commission as Major in the Veterinary Reserve Corps. Dr. Townsend was very active in making the plans for the meeting in Los Angeles in 1930.





## SOUTHERN STATES VETERINARY MEDICAL ASSOCIATION

The sixteenth annual meeting of the Southern States Veterinary Medical Association was held at the Ansley Hotel, Atlanta, Ga., November 9-10, 1931. Dr. J. L. Hopping, of Atlanta, presided. The invocation was delivered by Dr. Benjamin McInnes, of Charleston, S. C. Mr. Luke Arnold, secretary to Mayor James L. Keys, delivered the address of welcome and the response made by Dr. C. A. Cary, of Auburn, Ala.

The principal topic of general interest to the veterinarians present seemed to be the 1932 convention of the American Veterinary Medical Association, scheduled for Atlanta. That the veterinarians of all the southern states are regarding this convention as their meeting was very much in evidence, as those who participated in the program took their turns. The A. V. M. A. convention was one of the first things referred to by Dr. Hopping in his presidential address, and a general discussion of convention plans closed the meeting Tuesday afternoon.

Dr. H. Preston Hoskins, secretary-editor of the A. V. M. A., was present to represent the national organization, and at the same time to make preliminary plans for the 1932 meeting. Incidentally, it might be mentioned that this meeting of the Southern States Veterinary Medical Association was the tenth consecutive meeting of the organization to be attended by either the president or the secretary of the A. V. M. A., this custom having been started by Dr. W. H. Welch, when he was president during the year 1922-23. Dr. Hoskins briefly reviewed some of the major activities of the A. V. M. A., at the present time, including the proposed affiliation of state and provincial veterinary associations with the A. V. M. A.; the work of the Committee on Proprietary Pharmaceuticals; the recently published report of the Committee on Education, together with the veterinary student census pub-

lished in the November issue of the JOURNAL; preliminary plans for the International Veterinary Congress, to be held in the United States in 1934; membership campaigns and various forms of publicity for veterinarians.

Dr. W. A. Barnette, of Greenwood, S. C., read a short but interesting paper on "Cattle Practice," in which he directed attention to a few of the common conditions encountered in dairy cows. This paper brought out many questions and a very interesting discussion followed. Dr. F. W. Morgan, of Chattanooga, Tenn., discussed the question, "How can a Practitioner Improve his General Condition?" In this paper, Dr. Morgan enumerated quite a list of activities in which a veterinarian may profitably engage. Dr. Morgan also sounded a note of warning against certain other activities, pointing out that it would be just as well for veterinarians to avoid them. The relations of the veterinarian to humane work brought out a very spirited discussion, in which quite a number of the veterinarians present related their experiences in this particular field. Although some of these experiences had been unsatisfactory, as far as the veterinarians were concerned, it seemed to be the consensus of opinion that the field had not been properly developed by veterinarians as a whole. There is a certain amount of veterinary work which cannot be divorced from humane work, and the opinion was expressed that it is much better to have strictly veterinary work done by veterinarians than by others, even though the financial remuneration may not be immediately satisfactory. A paper, entitled, "Normal Saline Infusions in Canine Practice," by Dr. H. Calvin Rea, of Charlotte, N. C., completed the program for the morning.

At the afternoon session, Dr. W. M. Neal, of the University of Florida, Gainesville, Fla., presented an illustrated lecture on "Mineral Deficiency." He reviewed the investigations which have been conducted in Florida, during recent years, for the purpose of determining the etiology of the disease rather common among cattle in certain parts of the State, known as "salt sick" and various other local names. It has been rather definitely shown that the elements copper and iron are intimately associated with the etiology of this disease which is found in those areas where there is a deficiency of these elements in the soil and in the crops grown on these soils. By adding salts of copper and iron to the deficient rations, the condition can apparently be

satisfactorily corrected. A mixture of common salt, iron ore and copper sulfate has been found efficacious.

Dr. C. E. Salsbery, of Kansas City, Mo., presented "Distemper in Dogs," in a very interesting fashion. Dr. Salsbery briefly reviewed the investigations that have been conducted, from time to time, in efforts to determine the etiology of canine distemper, concluding with the recent work of Laidlaw and Dunkin, in England. Dr. Salsbery placed special emphasis on the symptoms of true canine distemper when it is caused by the filtrable virus and before complications set in, the result of the invasion of other organisms that are usually associated with the disease. He briefly explained the more important steps in the production of the newer biological products used in the prevention and treatment of canine distemper. A very animated discussion followed, and Dr. Salsbery was called upon to answer numerous questions.

The evening was given over to a banquet at the Ansley Hotel, with Dr. F. E. Kitchen, of Greenville, S. C., officiating in the rôle of toastmaster. He called upon quite a number of the veterinarians and ladies present for two-minute speeches, and in each case assigned a topic. It was quite noticeable that practically no one said anything on the topic assigned him and just about as little attention was placed on the time limit imposed by the toastmaster. This, however, did not appear to disturb his equilibrium to the slightest degree, and all joined in saying that the banquet was one of the outstanding features of the meeting.

On the morning of the second day, Dr. Rupert Fike, of Atlanta, Ga., a physician who has specialized in the diagnosis and treatment of tumors, gave an extremely interesting address on this subject. Dr. Fike spoke extemporaneously and he presented his subject in such an interesting way that everybody was sorry when he concluded his talk. The discussion which followed brought out many interesting points in the field of tumor diagnosis and surgery.

A representative of the Cutter Laboratory, of Berkeley, Calif., showed a moving picture, entitled, "Rabies." This brought out many interesting points in connection with the prevention and control of rabies, including its diagnosis. A portion of the film showed a case of rabies in a child.

The meeting closed with a general discussion of plans for the 1932 meeting of the A. V. M. A.

### MICHIGAN-OHIO VETERINARY MEDICAL ASSOCIATION

The semi-annual meeting of the Michigan-Ohio Veterinary Medical Association was held at the Courthouse, Adrian, Mich., November 19, 1931. Dr. A. H. DeGroot, of Dundee, Mich., presided. Dr. E. C. W. Schubel, of Blissfield, Mich., is secretary of this wide-awake association. The program for the meeting was arranged with a view to attracting the practitioners and, judging from the attendance and the interest shown, the effort was eminently successful.

Dr. A. B. Curtice, of Hillsdale, related his experiences and observations on mastitis. The discussion was led by Dr. Geo. E. Bowler, of Tecumseh, Mich. There was a very marked difference of opinion concerning the advisability of injecting solutions into the udder. Several veterinarians reported good results following the use of quite large doses of bacterin, and one practitioner reported good results attending the use of large doses of anti-mastitis serum in those cases where the value of the animal would warrant this treatment.

Dr. Stanley G. Colby, of Monroe, Mich., related some interesting experiences with "Digestive Trouble of Cattle." Quite a number of those present related their experiences with the stomach tube in cases of impaction of the rumen.

Dr. H. J. Seaman, of Wauseon, Ohio, presented a brief but interesting paper on "Fowl-Pox." The discussion on this subject was led by Dr. J. H. Lenfestey, of Lyons, Ohio. In the course of the discussion it was brought out that considerable fowl-pox vaccine is being distributed in different parts of Michigan, among poultrymen. The dangers and inadvisability of allowing the distribution of such a product among laymen was pointed out, and a committee was appointed to draft a resolution directing the Committee on Legislation of the Michigan State Veterinary Medical Association to make efforts to secure the passage of a law, at the next session of the Legislature, that would empower the State Department of Agriculture to adopt rules and regulations governing the distribution and use of all biological products containing living organisms or live viruses of any animal disease.

Dr. E. C. W. Schubel, of Blissfield, Mich., presented a very timely paper, entitled, "Swine Diseases." The discussion of this

paper was led by Dr. W. K. York, of Lima, Ohio. Hog cholera, swine erysipelas and necrotic enteritis received most attention.

Dr. C. F. Tuthill, of Onsted, Mich., discussed "Fistulae," and Dr. B. J. Killham, of Michigan State College, reported on the recent meeting of the American Veterinary Medical Association, at Kansas City, with particular reference to matters of interest to practitioners.

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### **NORTHEASTERN PENNSYLVANIA VETERINARY MEDICAL CLUB**

A meeting of the Northeastern Pennsylvania Veterinary Medical Club was held at the Hotel Redington, Wilkes-Barre, Pa., November 19, 1931. The members of the Club had the pleasure of listening to Dr. Louis A. Klein, of the University of Pennsylvania School of Veterinary Medicine, who spoke on mastitis of cattle. This address was very interesting and instructive to all present. Dr. H. R. Church, Deputy State Veterinarian, gave a very interesting talk on the work that has been done by the Pennsylvania Bureau of Animal Industry. Dr. H. W. Turner, of the Pennsylvania Bureau of Animal Industry, gave a very pleasing demonstration of the administration of medicine to sheep.

Roll-call showed sixteen veterinarians present.

THOS. D. JAMES, *Secretary.*

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### **VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY**

The regular monthly meeting of the Veterinary Medical Association of New York City was held on Wednesday evening, October 7, 1931, in the Academy of Medicine Bldg., 103rd St. and Fifth Ave., New York City, at 8:30 p.m.

Dr. R. J. Garbutt, Chief Surgeon of the American Society for the Prevention of Cruelty to Animals, showed the motion pictures which he had taken of some of the small-animal hospitals located in New York City, West Chester and New Jersey, and on Long Island. The films were most complete, showing the exteriors of the hospitals and, where possible, the interiors, with their arrangements. These pictures had taken many months of Dr. Garbutt's time, and were a credit to his photographic ability. Following the hospital film, Dr. Garbutt showed pictures of many operations and numerous x-ray plates of fractures and foreign



bodies. A rising vote of thanks was extended to Dr. Garbutt for his excellent and interesting films.

Dr. Atwood, of New Haven, showed motion pictures of a cesarean operation on a Boston terrier.

Dr. O. E. McKim, of Port Chester, read a paper, advocating the passage of a bill by the Legislature providing for the reimbursement of persons for all damage and injury done by dogs to both animals and people, such money to come out of the dog tax fund of the city or county involved. He urged the members to write to their assemblymen urging the passage of this bill.

No further business appearing, the meeting adjourned.

JOHN E. CRAWFORD, *Secretary*.

### Kansas City Convention Notes

Eighteen Gopher veterinarians journeyed to the "Heart of America." Besides the sextette from the University of Minnesota whose names were given in a note in the September JOURNAL, the following Minnesotans were present: Drs. Geo. M. Carson, Albert Lea; C. E. Cotton, J. P. Foster, F. D. Guthrie and O. B. Morgan, Minneapolis; C. A. Hauschen, Brewster; E. H. Karttrude, Jasper; T. M. Lee, Watertown; M. C. Linnemann, Saint Joseph; R. Schaap, Pipestone; C. F. Schlotthauer, Rochester; and R. L. West, Waseca.

The veterinarians from Michigan were probably not aware of the fact that they numbered thirteen. Twelve visitors brought the number of Wolverine registrations to twenty-five. The veterinarians were: Drs. C. F. Clark, E. T. Hallman, B. J. Killham and H. J. Stafseth, East Lansing; H. Elzinga, Marne; F. K. Hansen, Marquette; Wm. Hansen, Greenville; H. Preston Hoskins, L. H. LaFond, A. S. Schlingman and Z. Veldhuis, Detroit; F. E. Stiles, Battle Creek; and J. Y. Veenstra, Grand Rapids.

As in the case of Michigan, New York was another state that registered thirteen veterinarians at Kansas City. The Empire Staters included Drs. E. B. Ackerman, Huntington; J. W. Benner, R. R. Birch, E. L. Brunett and W. A. Hagan, Ithaca; Adolph Eichhorn, Pearl River, Fred D. Fordham, Watkins Glen; Karl B. Hanson, Saratoga Springs; G. E. Jacobi, Goshen; W. A. James and Robert S. MacKellar, New York; Wm. Henry Kelly, Albany; and C. E. Stone, Penn Yan.

# NECROLOGY



## WILLIAM P. ELLENBERGER

Dr. Wm. P. Ellenberger, assistant chief of the Field Inspection Division, U. S. Bureau of Animal Industry, died October 26, 1931, at the Emergency Hospital, Washington, D. C., of a fractured skull, the result of an accidental fall.

Born in Easton, Ohio, July 4, 1871, Dr. Ellenberger was educated in the elementary and high schools of Wadsworth, Ohio. He attended the Ontario and McKillip Veterinary colleges, but did not complete the course at either institution. He entered



DR. WM. P. ELLENBERGER

the Veterinary Department of Columbian University, at Washington, D. C., and was graduated with the degree Doctor of Veterinary Science in 1897. He practiced for about a year and then entered the service of the Bureau of Animal Industry.

Dr. Ellenberger's first assignment was at Cincinnati, Ohio, as an assistant inspector, on meat inspection. He advanced to inspector in charge, on tick eradication in Tennessee, and subsequently rose to the position of assistant chief of the Tick Eradi-

cation Division, serving from 1917 to 1920. He then became assistant chief of the Field Inspection Division, a post he continued to hold until his untimely death. He was joint author of a bulletin on the subject of the cattle fever tick and its eradication, and of a publication giving directions for the construction of vats and dipping cattle to destroy ticks.

Dr. Ellenberger joined the A. V. M. A. in 1900. He is survived by his widow and one son.

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### MALCOLM CLAPP BAKER

Dr. M. C. Baker, one of the most prominent veterinarians in the Dominion of Canada, died at his home in Montreal, Quebec, October 27, 1931, in his 82nd year.

Born at Dunham, Quebec, in 1849, Dr. Baker was educated at Dunham Academy and the Montreal Military School, from which he was graduated in 1876. Three years later he was given a commission in the Canadian militia, when the Fenian raids broke out. Later he decided to study veterinary medicine and entered the Montreal Veterinary College, from which he was graduated in 1879. Later Dr. Baker resumed his studies in the Department of Comparative Medicine and Veterinary Science at McGill University and received the degree Doctor of Veterinary Science in 1890. For a time he was professor of anatomy in the institution.

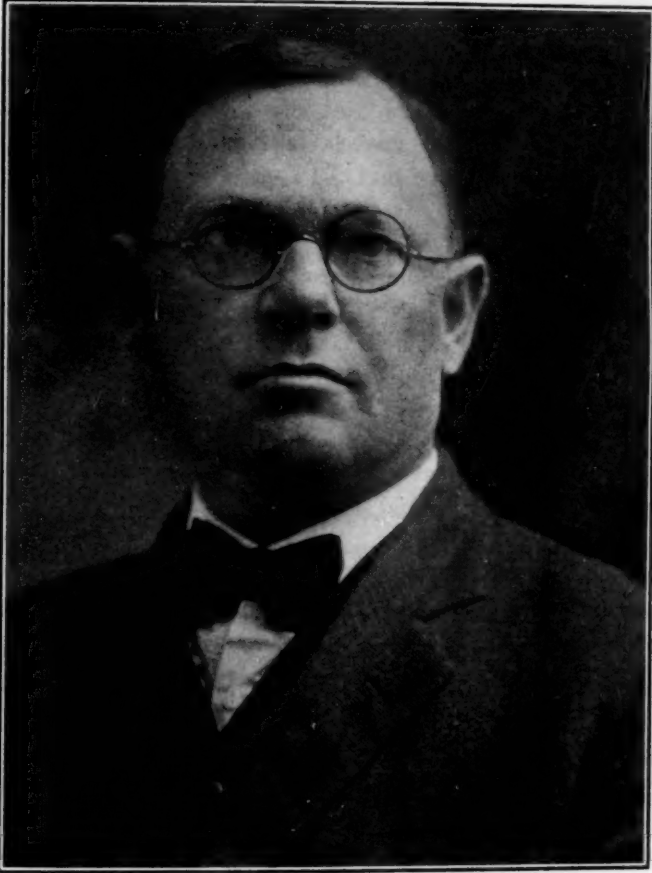
In 1879 Dr. Baker was appointed inspector of animals for export and import at the port of Montreal, a position he retained until his death. At one time he was associated in practice with the late Dr. Duncan McEachran. During recent years Dr. Baker and his son, Dr. Charles B. Baker (Ont. '23), conducted a veterinary hospital and general practice in Montreal. For a quarter of a century Dr. Baker was president of the Board of Governors of the College of Veterinary Surgeons of the Province of Quebec.

Dr. Baker joined the A. V. M. A. in 1902. At the meeting in Saint Louis, in 1922, he was elected third vice-president. He was chairman of the Committee on Local Arrangements for the Montreal meeting in 1923. He was the oldest member of the Thistle Curling Club, his membership dating from 1887. He was a member of the Montreal Hunt Club and the Canadian Club. He took a deep interest in the Boy Scout Association of Canada. He is survived by his widow, four sons, three daughters and three sisters.

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**JESSE PAGE SPOON**

Dr. J. P. Spoon, of Burlington, North Carolina, died suddenly, October 29, 1931, while seated in his car at a filling station. Although he had not enjoyed good health for some time, his death came as a distinct shock to his many friends. Angina pectoris was the cause of his death. He had frequently expressed a desire to die "in the harness," and this desire was realized.



**DR. J. P. SPOON**

Born at Burlington, N. C., June 20, 1883, Dr. Spoon attended country school and later the North Carolina Agricultural and Mechanical College, from which institution he received the degree Bachelor of Science in Agriculture in 1908. He taught and took postgraduate work at his Alma Mater the following year and

received the degree Master of Science in 1909. He then entered the Kansas City Veterinary College and was graduated in 1911. He located at Burlington and built up one of the largest veterinary practices in North Carolina. He was also Municipal Food and Dairy Inspector.

Dr. Spoon joined the A. V. M. A. in 1917. He was Resident Secretary for North Carolina from 1919 until 1926. At the time of his death, Dr. Spoon was president of the North Carolina State Veterinary Medical Association. He had previously served the organization as vice-president (1912-13), secretary (1913-15) and treasurer (1915-24). He was actively identified with the First Baptist Church and had served as a member of the Board of Deacons for over sixteen years, part of the time as Chairman. He had just completed twenty years as a member of the Church choir. He was a member of Alpha Psi Fraternity and served as treasurer of Delta Chapter, 1910-11.

For many years Dr. Spoon served as a member of the City School Board, a post he held at the time of his death. He was a charter member of the local Rotary Club and was always identified with all progressive movements. His death is a distinct loss to the profession, not only in North Carolina, but nationally. Surviving Dr. Spoon are his widow (née Mabel Lea), two daughters, four brothers and several sisters. A large number of veterinarians attended the funeral services.

W. M.

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### WARNER B. SCOTT

Dr. W. B. Scott, of Middletown, Ohio, died at a local hospital, November 5, 1931, after an illness of about a week. A cerebral hemorrhage during his illness was the immediate cause of death.

Born in Shandon, Ohio, in 1865, Dr. Scott studied veterinary medicine at the Ontario Veterinary College. He was graduated in 1890 and returned to Shandon, where he practiced until about 1903, when he removed to Middletown. He enjoyed a very large and lucrative practice throughout Butler County and adjoining territory.

Dr. Scott was a member of the Elks and Moose lodges, in both of which organizations he took a deep interest. He is survived by two daughters, two stepsons, two sisters and two brothers.

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**JOEL EDGAR CLOUD**

Dr. J. E. Cloud, formerly Inspector-in-Charge of the San Diego, Calif., station of the U. S. Bureau of Animal Industry, died at his home in San Diego, November 13, 1931, after an illness of a few weeks, although he was confined to his bed for only six days. Cirrhosis of the liver and obstructive jaundice, due to gall-stones, were the causes of death.

Born at Spiceland, Indiana, May 24, 1858, Dr. Cloud was educated in the public schools and was graduated from the Spiceland Academy. He entered the Chicago Veterinary College and was graduated in 1890. He took a postgraduate course at the McKillip Veterinary College and was graduated from this institution in 1899. After spending a few years in general practice at Richmond, Ind., associated with the late Dr. L. C. Hoover, and then at Indianapolis, Dr. Cloud entered the services of the U. S. Bureau of Animal Industry in 1900 and was assigned to meat inspection in Chicago. With subsequent promotions, he became Inspector-in-Charge at Des Moines, Iowa; Lafayette, Ind.; Louisville, Ky., and San Diego, Calif. He was transferred to the last-named station in 1912 and resigned from the service in 1929.

Dr. Cloud joined the A. V. M. A. in 1922. He had been active in Masonic circles, being a member of the Blue Lodge and Commandery of Richmond, the Consistory of Indianapolis, and the Shrine of Chicago and San Diego. He was also a member of the Odd Fellows and the Knights of Pythias. He was a former secretary of the Indiana Veterinary Medical Association and at the time of his death was president of the San Diego-Imperial Veterinary Medical Association.

Dr. Cloud is survived by his widow and one brother. San Diego veterinarians were active pallbearers at the funeral services held November 16. Entombment was at Benbough Memorial Mausoleum, San Diego.

R. A. W.

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**VOLNEY V. SHATTUCK**

Dr. Volney V. Shattuck, of Omaha, Nebr., died at his home, November 13, 1931, after a short illness. The cause of his death was septic meningitis.

Born at Brazil, Ind., April 13, 1875, Dr. Shattuck attended local grade and high schools and then the Indiana Veterinary

College, from which he was graduated in 1910. He engaged in general practice in Indiana until August 15, 1918, when he received an appointment in the service of the U. S. Bureau of Animal Industry and was assigned to Omaha, Nebr., where he remained until his death.

Dr. Shattuck joined the A. V. M. A. in 1921 and was a member of the National Association of B. A. I. Veterinarians. He is survived by his widow, one son, his father, three brothers and two sisters.

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### CHALMER SCOTT SHORE

Dr. C. S. Shore, of Lake City, Minn., died at his home, November 19, 1931, after an illness of about three months. He had been at the Mayo Clinic, Rochester, suffering from some form of neoplastic spinal trouble.

Born at Three Springs, Pa., October 18, 1873, Dr. Shore received his veterinary education at the University of Pennsylvania. Following his graduation in 1901, he located at Lake City and built up one of the largest general practices in Minnesota. Dr. Shore was a natural-born general practitioner. He possessed a pleasing personality that won him a host of friends. He was an excellent diagnostician, a bold surgeon and a resourceful therapist, qualifications that were so essential for success in a mixed country practice of a quarter-century ago when calls were long and modern conveniences not at hand. As a student Dr. Shore was a sort of protégé of the late Dr. John W. Adams, and it was at the suggestion of the latter that Dr. Shore located in Lake City, where Dr. Adams had lived before going to the University of Pennsylvania.

Dr. Shore joined the A. V. M. A. in 1907. He was a member of the Minnesota State Veterinary Medical Society and served as president for the year 1915-16. For sixteen years Dr. Shore served as a member of the City Council of Lake City. He was a director of the Security Bank and also of the Lake Pepin Co-operative Creamery. His masonic affiliations included the Knights Templar and Shrine. He also belonged to the Elks and the Modern Woodmen. Surviving Dr. Shore are his widow (née Olga Chinberg) and two daughters.

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## PERSONALS

### BIRTHS

To Dr. and Mrs. James E. Patterson, of Detroit, Mich., a son, James Eberle, Jr., July 31, 1931.

To Dr. and Mrs. Paul C. Underwood, of Washington, D. C., a daughter, Marilyn Lewis, October 14, 1931.

### PERSONALS

Dr. Roy D. Hoffman (U. P. '31) has located at Bedford, Pa.

Dr. H. N. Waite (Chi. '15) has removed from Belvidere, S. Dak., and is now located at Corsica, S. Dak.

Dr. Chas. T. Fake (Geo. Wash. '12) has reported a change of address from Granville, N. Y., to Bay Shore, N. Y.

Dr. A. J. Damman (Wash. '05-McK.'08), of Vancouver, Brit. Col, will spend the winter months at Enumclaw, Wash.

Dr. Russell C. Evans (Chi. '15) has taken over the practice of his father, the late Dr. C. E. Evans, of Racine, Wis.

Dr. W. E. Frink (Corn. '07), of Los Angeles, Calif., has been in the East, the past month, visiting relatives and friends.

Dr. H. L. Simpson (McK. '12) has removed from San Diego, Calif., to Escondido, Calif. Address: 230 E. Third Ave.

Dr. S. J. Lewis (McK. '12), of Sullivan, Ill., has been appointed to the position of chief veterinarian for the Pevely Dairy Company.

Dr. Ralph A. Wilson (O. S. U. '30), formerly of Waldo, Ohio, is now located at Maplewood, N. J. Address: 2259 Millburn Ave.

Dr. J. K. Morrow (O. S. U. '30), formerly of Stelton, N. J., is now located in Winnipeg, Canada. Address: 50 Whitehall Ave.

Dr. Amor E. Hancock (O. S. U. '31) has returned to Ohio State University for postgraduate work in parasitology and bacteriology.

Dr. H. C. Terry (Amer. '94), of Langhorne, Pa., attended the annual convention of the National Grange, held in Madison, Wis., in November.

Dr. T. L. Bott (Gr. Rap. '12), of Coldwater, Mich., recently completed the construction of a new veterinary office and hospital at 54 N. Hanchett St.

Dr. D. W. Gates (U. P. '25), of Millheim, Pa., is taking postgraduate work at the New York State Veterinary College, Cornell University, Ithaca, N. Y.

Dr. O. Augsperger (St. Jos. '08) has been reappointed County Veterinarian, by the Board of Supervisors of Winnebago County (Ill.), at a salary of \$4,000.00 per year.

Dr. Daniel De Camp (K. S. C. '29) has been transferred from Austin, Minn., to Detroit, Mich., on poultry inspection service, for the Bureau of Agricultural Economics.

Dr. C. L. Kern (Corn. '24) has been promoted to Chief Field Veterinarian of the Dairymen's League Coöperative Association, with headquarters at Syracuse, N. Y.

Dr. Santiago Y. Rotea (U. Phil. '17), of Jaro, Iloilo, Philippine Islands, who has been in the United States, during the past year, sailed from New York for Europe, on November 18.

Dr. E. L. Volgenau (Amer. '93), City Veterinarian of Buffalo, N. Y., has been quite ill for the past few months but is slowly recuperating and expects to be at his desk again about the first of the year.

Dr. Clifford Wagner (O. S. U. '26), formerly of Cleveland, Ohio, is taking postgraduate work at Ohio State University, College of Veterinary Medicine, majoring in medicine and taking minor work in parasitology.

Dr. James K. Strockbine (U. P. '26), formerly of Bedford, Pa., has accepted a position in the Pennsylvania Bureau of Animal Industry Laboratory, at Harrisburg, Pa. Dr. Strockbine is living at New Cumberland, Pa.

Dr. W. L. Scofield (Gr. Rap. '11), of Athens, Mich., has been appointed Calhoun County (Mich.) Live Stock Sanitary Agent, to succeed Dr. F. W. Main (Gr. Rap. '09), of Albion, Mich., who had held the position for three years.

Dr. Chas. Schmitt (Chi. '92), of Dodgeville, Wis., was badly bruised when he was trampled by a cow recently, while applying the tuberculin test to the animal. He was removed to a local hospital but it was found that there were no bones broken.

Dr. L. J. Allen (Ont. '11), of Willoughby, Ohio, recently treated a dog that had received injuries as the result of getting too close to the propeller of an aeroplane when the ship was making a landing. This is believed to be the first case of this kind reported.

Dr. Robert Conover (Chi. '20), who was associated with Dr. Reuben Hilty (O. S. U. '07), of Toledo, Ohio, for several years, has been engaged in tuberculin testing in Lucas County (Ohio,) for the State Department of Agriculture, since September 1.

Dr. P. M. Abernethy (K. C. V. C. '18), formerly connected with the State Department of Agriculture, at Raleigh, N. C., has taken over the practice of the late Dr. J. P. Spoon, at Burlington, N. C. Dr. Abernethy was also elected Municipal Food and Dairy Inspector, a position formerly held by Dr. Spoon.

Dr. H. E. Wright (Mich. '18), of Ann Arbor, Mich., was recently presented with a blowtorch by the Lenawee County Board of Supervisors. The blowtorch had been purchased for Dr. Wright, about five years ago, for use in connection with tuberculosis eradication. The generosity upon the part of the Supervisors was demonstrated when they learned that Dr. Wright had spent only a little over one-half of the money appropriated for tuberculin testing, during the past year.

Dr. J. S. Grove (Ont. '92) retired from the service of the U. S. Bureau of Animal Industry, on November 1, after more than thirty-two years of continuous service. Dr. Grove has been appointed Superintendent of the Municipal Abattoir at Austin, Texas, a position for which he is admirably equipped as a result of his long experience in the federal meat inspection service. Dr. Grove has been Secretary-Treasurer of the National Association of Bureau of Animal Industry Veterinarians, for a number of years.

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